FLORIDA WILDLIFE®

Volume 44, No. 1 January-February 1990

How to help give wildlife an extra "edge"

The area where two kinds of natural terrain meet, such as the portion between woods and fields, typically produces the kind of wildlife habitat that provides a maximum supply of food and shelter for a great variety of wildlife. This "edge" is the kind of habitat wildlife managers often strive to create, particularly through planting of food-bearing shrubs and bushes.

Landowners can greatly benefit many kinds of wildlife in their area, from deer to songbirds, by similar planting or by simply not mowing or cutting down brushy edges where they already exist. For years, private sportsmen groups throughout America have been improving habitat through such plantings and other habitat restoration programs. Such efforts have helped to develop and upgrade millions of acres of habitat which provide the food, shelter and space all species need in order to survive.

NSSF
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Our Covers

As distinguished as it looks on our front cover, the crested caracara makes quite a glutton of itself come dinnertime. Read about this member of the falcon family on page 20. Lynn Stone took this photograph, as well as that of the roseate spoonbills in reflective repose on our back cover. The bird with the distinctive bill is the subject of Floridana on the inside back cover.

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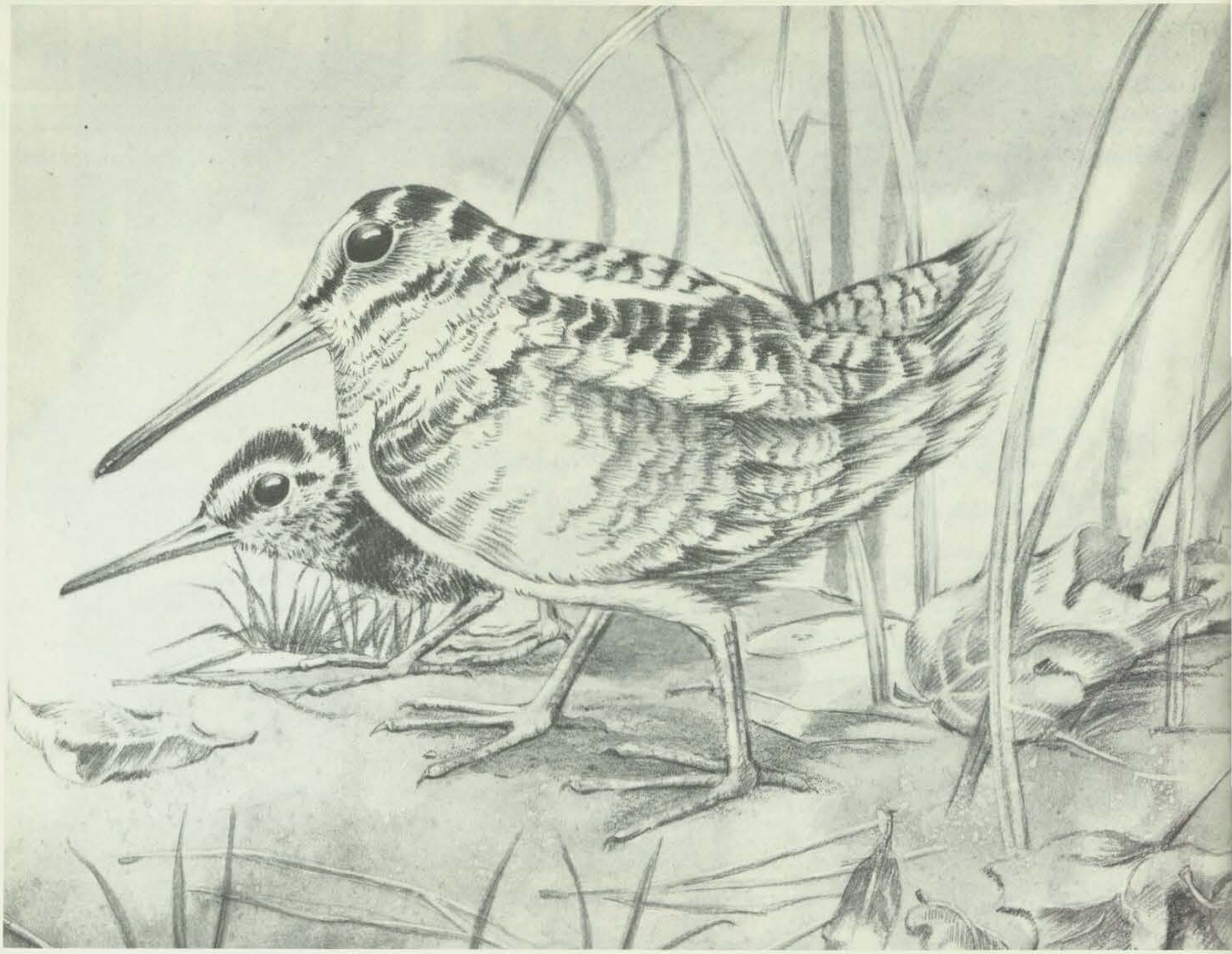

WOODC

By Nick Wiley

It was a crisp, winter morning, one of those days made for chasing energetic bird dogs across fields and woodlands in search of feathered game. My hunting partner and I entered a stand of aging pines just in time to see our brace of Brittany spaniels suddenly yanked off course by some irresistible scent. We anxiously followed their excited noses down and out of the uplands to the edge of a seemingly impenetrable titi swamp. As the dogs disappeared into this wall of vegetation, our hopes of bagging any self-respecting upland game bird faded. We reluctantly fought our way into the boggy thicket fully prepared to drag our misguided friends out by their ears. To our surprise, however, we found both dogs on point, eyes fixed on the leaves that surely concealed the source of that alluring scent. But what odd species of game bird would take cover in such a forbidding, swampy place fit only for earthworms and bullfrogs?

North Florida bird hunters have probably played out this scene many times, and the odd bird most often the source of confusion is the American woodcock. The woodcock's scientific name is *Scolopax minor*, but it is better known by various, colorful, common names such as timberdoodle, bogsucker, mudhen, or woodsnipe (not to be confused with its close relative, the common snipe). The American woodcock is a popular migratory game bird in the northeastern United States and is slowly gaining favor as a game bird on its wintering grounds in the Southeast. However, the majority of woodcock harvested in northern Florida are taken incidental to bobwhite quail hunting. Quail hunters rarely pass up the opportunity to bag the occasional woodcock their bird dog stumbles across while nosing around in a moist wax myrtle thicket or patch of

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gallberry. Additionally, woodcock make excellent game for working with pointing dogs because of the bird's tendency to "freeze" and remain motionless when closely encountered.

Many people have described the woodcock as a creature made up of spare parts from other birds, but a closer look reveals a bird wonderfully adapted for life on the ground floor of eastern North American forests.

About the size of a bobwhite quail, woodcock are rarely seen by the casual observer because their mottled brown and buff feathers blend well with leaves on the forest floor. When you are lucky enough to catch a glimpse of a woodcock, you will notice characteristics that begin to shed light on its shadowy existence.

Your attention will first be drawn to a bill that measures 2 ½ inches in length and looks very awkward on this woodland dwelling bird. To the contrary, this bill is a remarkable tool with a flexible tip adapted for probing moist woodland soils to capture favorite food items such as earthworms and insect larvae. As you look closer you will notice its large eyes are positioned to the side and rear of the head. This adaptation gives the woodcock a wide range of vision to spot predators even while his bill is stuck in the ground grabbing a meal. If you encroach too closely in your observation and flush a woodcock under foot you will be amazed by its ability to fly quickly through thick cover with acrobatic ease, thanks to short, rounded wings, a compact body and excellent vision. A less obvious but important physical feature is the location of its ear openings. They are positioned forward between the eyes and the bill, allowing for better detection of prey moving through the leaf litter or soil. Finally, to accommodate such an unusual organization of ears, eyes, nose and mouth, the woodcock's brain is oriented upside down in its skull.

Woodcock are migratory birds, usually arriving in north Florida with the first cold fronts in November. They take up winter residence where a generous supply of earthworms and adequate overhead cover can be found, often near rivers and streams interspersed with croplands and pastures. Wax myrtle, gallberry or titi thickets usually provide excellent daytime cover for woodcock. Cultivated fields and open pastures are ideal for feeding and roosting at night.

To scout for good woodcock habitat for hunting or observation, there are two important clues to look for: 1) proper vegetative structure — thick midstory or shrub-layer plants often with a thin overstory of large trees; and 2) moist, fertile, bottomland soils. It is important to note that woodcock often move around from one "covert" to another once they arrive on the wintering grounds. So don't get discouraged if you find a likely spot without birds. Keep checking back from time to time, especially after a cold front, and your persistence will likely be rewarded.

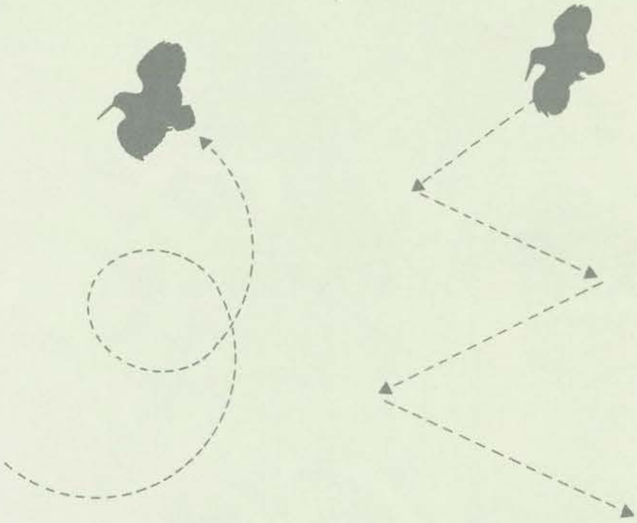
North Florida — especially the panhandle — provides an abundance of attractive wintering sites for migrating woodcock, but the future may not be so bright. Researchers believe that wintering habitat in the Gulf states is declining faster than anywhere else on the ▷

breeding or wintering grounds. Of primary concern is destruction of natural wetlands through drainage, stream channelization, and clearing of bottomlands for agricultural, urban, or industrial purposes. These are major threats to productive wintering woodcock habitat. This decline of suitable habitat in Florida and other Gulf states is significant because a large portion of the entire woodcock population winters here.

Many woodcock begin courtship and breeding activities in Florida and other southeastern states before migrating northward. On a warm evening in late January or early February, just after sundown, if you quietly position yourself near a small field or forest opening adjacent to woodcock cover, you might be fortunate enough to witness the "sky dance." This courtship display flight can be thrilling to watch as the male bird launches himself into the sky with twittering wings and vocal chirps followed by a soft landing and a repeated frog-like call, often described as a "*peent*" sound. These dramatic performances are preliminary to breeding and nesting activities, though little nesting occurs in Florida. The long migration back north begins in February and March. Some hens settle down to nest and raise their chicks in the Southeast, but most begin migration to the Northeast before nesting.

The American woodcock has a great deal to offer those people interested in pursuing new and unusual outdoor experiences. Sighting secretive woodcock while on a weekend nature walk would excite even the veteran bird watcher. Also, rewarding experiences await the hunter and bird dog determined enough to tackle the elusive "bogsucker" in his winter haunt. Woodcock season in Florida runs from Dec. 9, 1989 through Jan. 22, 1990, and the daily bag limit is three. A day in the field exploring swampy thickets with trained pointing dogs can be a refreshing break from traditional upland bird hunting. Even the most accomplished wing shot will be challenged by the acrobatic flight pattern of the "timberdoodle" flushed in thick cover.

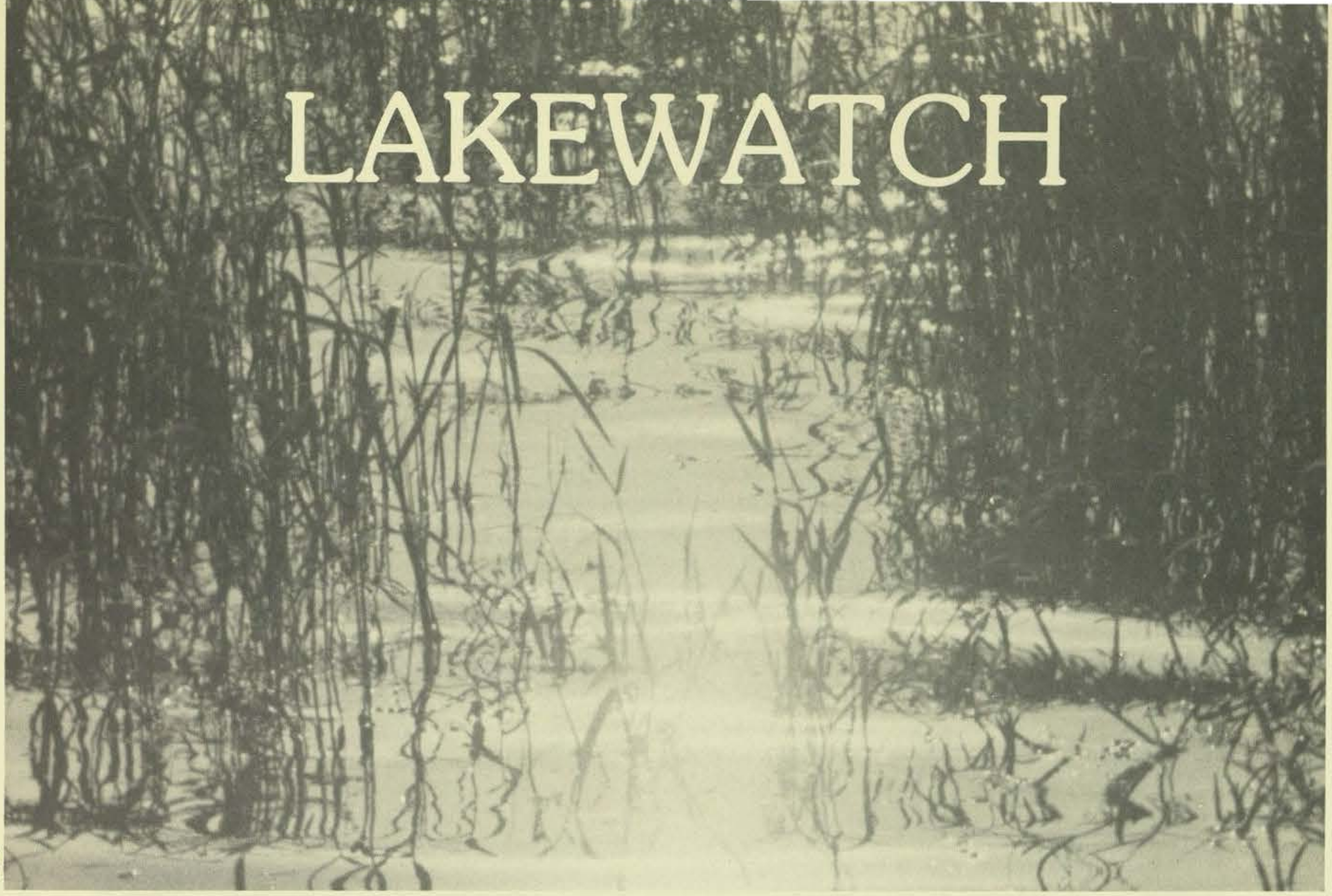
Nick Wiley is a Commission wildlife biologist with the alligator management program. He studied the American woodcock as a graduate student and is an avid bird hunter.



On a warm evening in late January or early February, just after sundown, if you quietly position yourself near a small field or forest opening adjacent to woodcock cover, you might be fortunate enough to witness the "sky dance."

The woodcock's bill is a remarkable tool with a flexible tip adapted for probing moist woodland soils to capture favorite food items such as earthworms and insect larvae.

LAKEWATCH



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Text and Photographs by Sandy Fisher

From the sound of Billy's voice on the phone, I could tell he was a young teenager. That concerned me, because I needed volunteers for Florida LAKEWATCH who would make a commitment to work with the program month after month, year after year. When I asked Billy about his intentions, he paused a moment and said, "Well, Ma'am, my great grandad owned this property on the lake. He left it to me and I plan to be buried here." Billy has been in the program ever since. His attitude is typical of the way people feel about *their* "lake places." One volunteer has over 100 years worth of pictures of *his* lake, which was named after his mother. A retired doctor built a transit so he could record the changing water levels during the past 20 years.

Lakes are special to those people who live there. Lakefront living means watching the bass bed along your shoreline, seeing the awkwardly regal walk of the wading birds stalking fish, watching osprey dive after a glint of silver, being awed by the beauty of the sunsets across the water, teaching kids to water ski, and taking photographs of the youngsters when the fish they catch are almost as big as the kids.

I live on a lake, so I know. And I have been monitoring my lake's water quality through the Florida LAKEWATCH Program for almost two years. The program began unofficially in the mid-1980s under the direction of Dr. Dan Canfield, Professor of Limnology at the Institute of Food and Agricultural Sciences (IFAS) at the University of Florida. While traveling around the state gathering data on lakes, Dr. Canfield saw the need for regularly scheduled data collection on the thousands of Florida lakes that were not being monitored by any agency. Knowing that the cost of having professionals do the job would be prohibitive and that other states have had successful citizen monitoring programs, Dr. Canfield began by training lake residents informally by himself.

Volunteers in Florida LAKEWATCH are taught how to take "grab samples" of surface water. Some of this water is frozen and later sent to the IFAS labs for measurement of nitrogen and phosphorus contents. Nitrogen and phosphorus are important because they fertilize plant growth (including algae growth) in lakes. The rest of the sample water is filtered, and the filter paper collects the suspended solids. These are later analyzed to find out how much algae is in the water. Since algae is the base of the food chain, it affects the numbers and sizes of fish and wildlife the lake can support. Volunteers also learn to use a Secchi Disk, an instrument that looks like a frisbee, and gives an indication of the clarity of the lake water.

The volunteer gets information on basic lake management techniques and, after a year of taking monthly samples, also receives a report on ▷

trends and changes in his lake.

While in the program, the volunteer has access to experts at IFAS who can answer questions about specific problems. So far the range of inquiries has been impressive. People have asked about the identification of specific plants, the oil scum on their boat's water line, the suds that form along the shore, the source of reddish water after a rain, how to get rid of "punk" trees, controlling snakes, causes of fish kills, lawn irrigation and fertilization techniques, stormwater management, registering eagles they see — and the list goes on. Instead of getting general information about lakes, people in Florida LAKEWATCH can get specific information about their lake and its unique problems.

Having specific information that documents trends in their lakes has made residents more effective in communicating with regulatory agencies. For example, LAKEWATCH data gathered on Lake Santa Fe in Alachua County show that the algae levels have quadrupled in the past eight months after having remained rather steady since 1986. This information will be used by the homeowners association to enlist the aid of the Suwannee River Water Management District.

Florida's tremendous population growth means tremendous impact on the state's 7,700 lakes. The Putnam County Board of Realtors reported that lakefront property makes up 80 percent of their sales. It's a race against time. Water quality in many Florida lakes is changing rapidly with the influx of lakefront residents. Baseline data should be gathered before the opportunity is lost.

Unfortunately, many people who purchase lakefront property do not know that their everyday actions may have a direct effect on water quality. A lake is not a swimming pool; it is a living, breathing organism with many interrelated parts. Besides water, a lake has many types of plants, fish, birds, insects, snakes, alligators and other wildlife. If one part of a lake's ecosystem is altered, it will affect another part, whether we see the consequences or not.

For example, to control plants that are sometimes perceived as a problem, herbicides, bio-controls, or harvesting techniques can be used. In some lakes this works fine. In others, if too many plants are removed, algae often proliferate and the water becomes "pea-soup" green. Lake residents aren't always aware that this might be one of the consequences of their actions, and ironically, often find themselves attempting to replant the lake's vegetation.

In Florida LAKEWATCH lake residents can learn what their range of options is and the consequences of each one. They can make informed decisions based on the specifics of their lake.

Since everyone agrees on the need for environmental information, the LAKEWATCH Program has proved to be an exciting and unifying catalyst for homeowners associations that are springing up around the state.

By donating about an hour of their time each month, the use of their boats, and transportation of the samples twice a year to Gainesville, lake residents are accomplishing what would otherwise cost thousands of dollars per lake. It is truly effective volunteerism at its best.

If you are interested in joining, send your name, address, phone number, lake name and county name to: Ms. Sandy Fisher, Florida LAKEWATCH, Department of Fisheries and Aquaculture, 7922 NW 71st Street, Gainesville, FL, 32606. Or, call (904) 392-9613.

Florida LAKEWATCH helps the people who care most about a lake look after it. Here, LAKEWATCH volunteers monitor nutrient levels and water quality.

LAKEWATCH volunteers are provided with a two-hour training session on their lake and given a sampling kit and an instruction booklet.

Insects Clear The Waterways

By Sandra Davis and Gary Buckingham

Photographs by Gary Buckingham

Florida fishermen know where to catch the big ones — under waterhyacinth mats and beside hydrilla columns. But hydrilla is often so thick that boats can't pass through it. Can aquatic plants be managed for both optimum fishing and optimum boating?

One solution may be plant management through insects. Scientists from the Agricultural Research Service in the U.S. Department of Agriculture (USDA-ARS) are studying insects as potential biological controls in congested waterways. If insects eat enough plants to open up waterways while leaving enough cover for good fish habitat, this plant management possibility should please both recreational boaters and anglers.

Scientists in Florida have found some experimental agents to help manage aquatic plants without eliminating them. Five insects have been imported from Argentina, Brazil and India to do the job. The alligatorweed flea beetle (*Agasicles hygrophila*), imported from Argentina in 1965 by the Agriculture Research Service, USDA and the Corps of Engineers, brought alligatorweed under control in five years. Once a nuisance plant clogging Florida waterways, alligatorweed now goes almost unnoticed by fishermen and wildlife management officials. The alligatorweed flea beetle doesn't attack other plants, and when its food supply becomes scarce, it simply dies out.

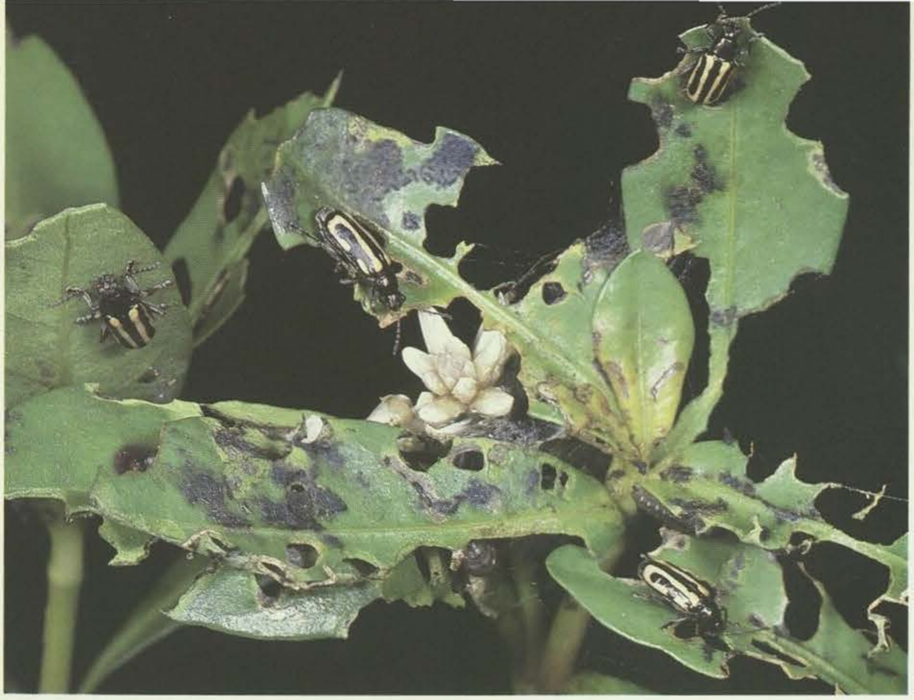
Similarly, the waterhyacinth weevil from Argentina (*Neochetina eichhorniae*) has helped aquatic plant managers reduce waterhyacinth, which 15 years ago threatened to block portions of the St. Johns River and other waterways to boaters.

Ironically, areas that weevils cleared of waterhyacinths have become ideal sites for the pesky water lettuce. To combat this plant, the Corps has released a South American beetle (*Neohydronomus affinis*). Dale Habeck, a researcher at the University of Florida, is presently studying an Asian moth that feeds exclusively on water lettuce as another potential candidate for release.

Hydrilla is the most troublesome plant in Florida's waterways. Yet a tiny beetle and an even tinier fly, discovered in India and Pakistan, could possibly eat through the massive hydrilla mats. The tiny hydrilla weevil (*Bagous affinis*) was released in Florida in April 1987, and the almost invisible hydrilla fly, (*Hydrellia pakistanae*) was released in October 1987. It's still too early to estimate the inroads the weevil and the fly have made so far, but Ted Center and other USDA-ARS researchers are targeting hydrilla-choked lakes and ponds where the release of plant-eating insects can be measured.

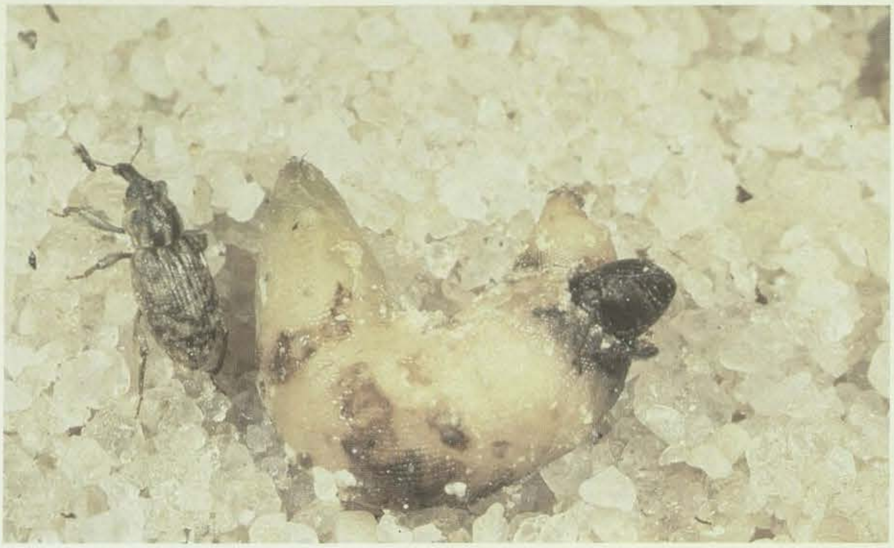
Although there have been many attempts to use aquatic plants as cattle fodder or to harvest them mechanically, these efforts have been largely unsuccessful. Old-timers who remember the nuisance of alligatorweed and waterhyacinth may not realize the role insects played in controlling these aquatic plants. We're on the brink of learning if new insect immigrants will do the same to water lettuce and hydrilla.

Sandra Davis, a technical writer, and Gary Buckingham, a research entomologist, are employed by the Agricultural Research Service in the U. S. Department of Agriculture, Biological Control, Gainesville. They contributed this article as part of their official duties.



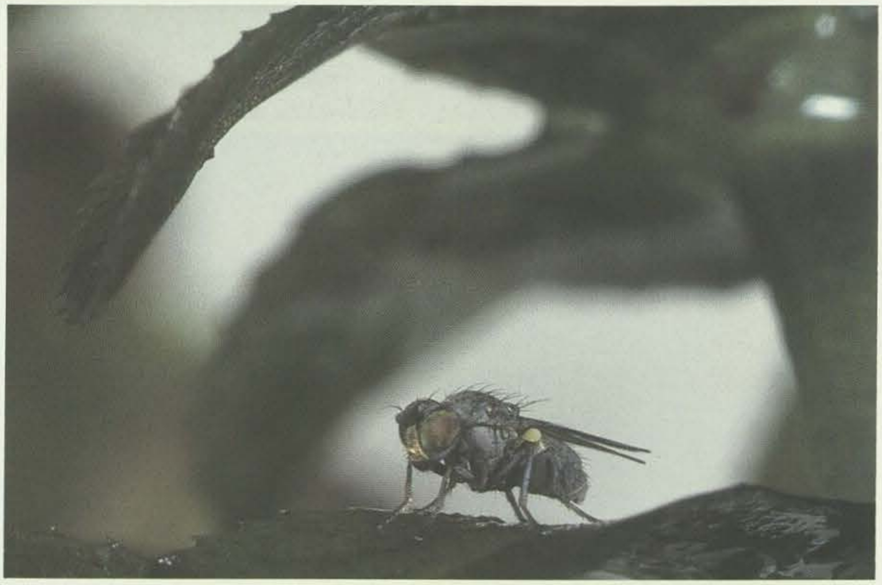
The colorful alligatorweed flea beetle thrives on alligatorweed leaves. Initially, both larvae and adults eat holes in the leaves.

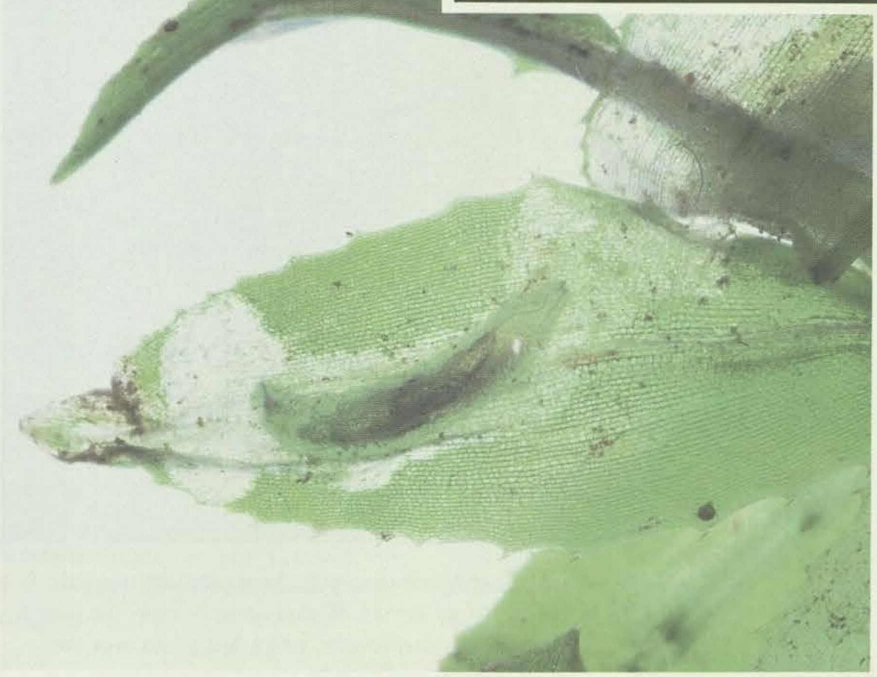
The waterhyacinth weevil chews plant leaves and petioles (leaf stems). Waterhyacinths look like islands in a sea of water lettuce, which has taken over the cleared areas and thus become the newest target for biological control by insects. ▷



Hydrilla weevils and larvae feed on hydrilla tubers made accessible after drought or drawdowns. Adults also feed on hydrilla leaves.

Resting on emergent hydrilla, the small hydrilla fly is dwarfed by the plant's leaves, where it lays its eggs.





Hydrilla fly larvae are leaf miners. While ignoring native water plants, each larva eats the contents of twelve hydrilla leaves which are left behind as transparent, empty shells.

PICKIN' A
TROPHY ORANGE

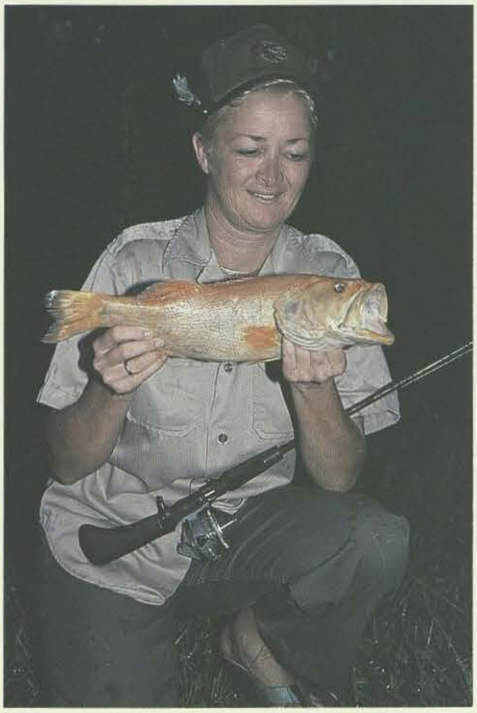
Text and Photographs by Lt. Jim Farrior, South Region

Until last spring, the only qualification for a trophy largemouth bass was that it be big, usually 8 pounds or more. On the day after Mother's Day, Mattie Louise Anderson changed all that when she picked a trophy orange from the waters of Lake Hatchineha. This was no navel, Valencia or Murcott, but a 2½-pound largemouth bass that truly defied the typical definition of a trophy bass.

What Mattie had caught was a "golden largemouth bass," one as gold as any goldfish that ever swam in a goldfish bowl. But gold is an inadequate word when it comes to describing goldfish. Everyone who has ever seen one of those bug-eyed carp knows that goldfish aren't really gold, but rather a bright, almost fluorescent, orange color.

Mattie was born in Dundee, just a stone's throw from Lake Hatchineha, and grew up with a fishing rod in one hand and an airboat rudder stick in the other. She's heard and told her share of fish stories, but when she told her friends about the orange bass she caught, they thought she was, at best, a tad on the crazy side. When she called the Florida Game and Fresh Water Fish Commission, the biologists were skeptical, yet reserved in their judgement. After all, it was possible, they knew.

When Mattie's friends saw the largemouth bass, they couldn't believe it. When Commission Fisheries Biologist Ken Denson saw it, he couldn't believe it either. But there it was, in all its brilliant orange glory, just as Mattie had described.



The odds of catching, or even seeing, a xanthic bass are astronomical — greater than a million to one. Yet, Mattie picked a trophy orange bass.

The disbelief shared by Mattie's friends, Ken Denson and other fisheries biologists was not altogether unwarranted. The occurence of this color, especially in bass, is extremely rare, yet attributable to a simple biological phenomenon.

Most fish are born with three types of specialized pigment-producing cells that give them their unique coloration. These three types of cells are melanophores, xanthophores and erythrophores. Melanophores are the black/brown pigment cells. Reddish pigmentations are possible because of erythrophores. Xanthophores are the yellow/gold pigment-producing cells, hence the term "xanthic," from the Greek "*xanthos*," meaning yellow. Hence Mattie's bass.

When a bass possesses all three pigment-producing cells, a bass looks like a bass. When a genetic mutation involving these pigment cells occurs, it's a bass of a different color.

The absence of melanophores and erythrophores, coupled with the presence of xanthophores, as in this case, will cause a bass to be orange. This particular genetic mutation is referred to as "xanthicism."

"Bright orange is not a color conducive for survival in a world where camouflage and large numbers help you make it to another day," said Denson. "An orange bass certainly can't blend in with its surroundings, and no matter

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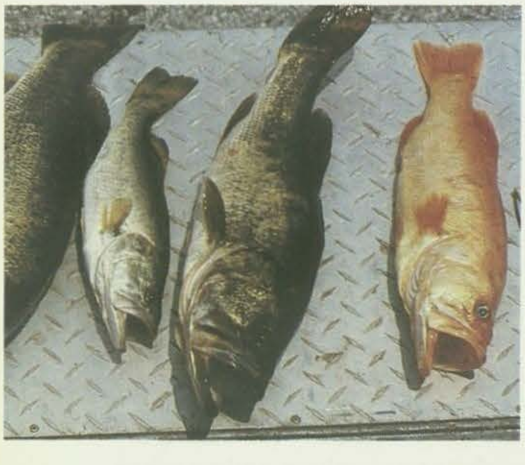
A genetic mutation caused this xanthic bass to be bright orange.



how many fingerling bass are in a school, it's the orange one that will be an easy target for predators."

"Consider this," Denson added, "when fishermen head to the tackle store to replace lures they lost on stumps, what do they buy? They buy brightly colored lures, ones that are easy to see."

Even if xanthic fish grow to a size too big to be eaten by other fish, they still stand out as easy pickings for larger predators like eagles, otters and ospreys. As improbable as it is for one to reach harvestable size, it's more improbable that a fisherman will see, and ultimately hook and land, that one special orange fish.

"The possibility of catching, or even seeing, a xanthic bass is astronomical; odds of about one in a million aren't even close," said Denson, who has recently become something of an expert on orange bass. "Pick up a rod and reel, go fishing all day, every day, for a thousand years. When that time has passed, get ready to go some more because in all probability, you still won't have caught one."

Only a few biologists with the Commission or other state or federal conservation organizations can even claim to have ever laid eyes on a xanthic bass, much less ever handled one. Each year the Commission produces millions of bass at its Richloam hatchery, and this condition has never been observed.

Mattie seemed destined to find this orange bass, however. On two prior occasions she'd been fishing her favorite spot and had close encounters with what was then an unidentified orange fish — defying improbable odds already.

Back in March, Mattie was fishing with what she fondly referred to as an "antique Dalton Special." She noticed a push of water behind the plug as she methodically worked it back to the boat. Her attempts to entice a strike were to no avail. But, as the lure approached the boat, Mattie could see this orange fish following a foot behind. Lifting the plug from the water ended the chase, and the fish sank out of sight in the dark lake.

That, however, was not the last appearance the mystery fish would make.

Though it looked remarkably similar to a bass, Mattie was sure, well almost sure, that it was "just a large, curious, exotic goldfish that escaped from its bowl or one illegally used as bait that survived the angler's hook and a bass' gullet."

One month later, in about the same spot, there it was again, doing the same thing, this time behind a black rubber worm.

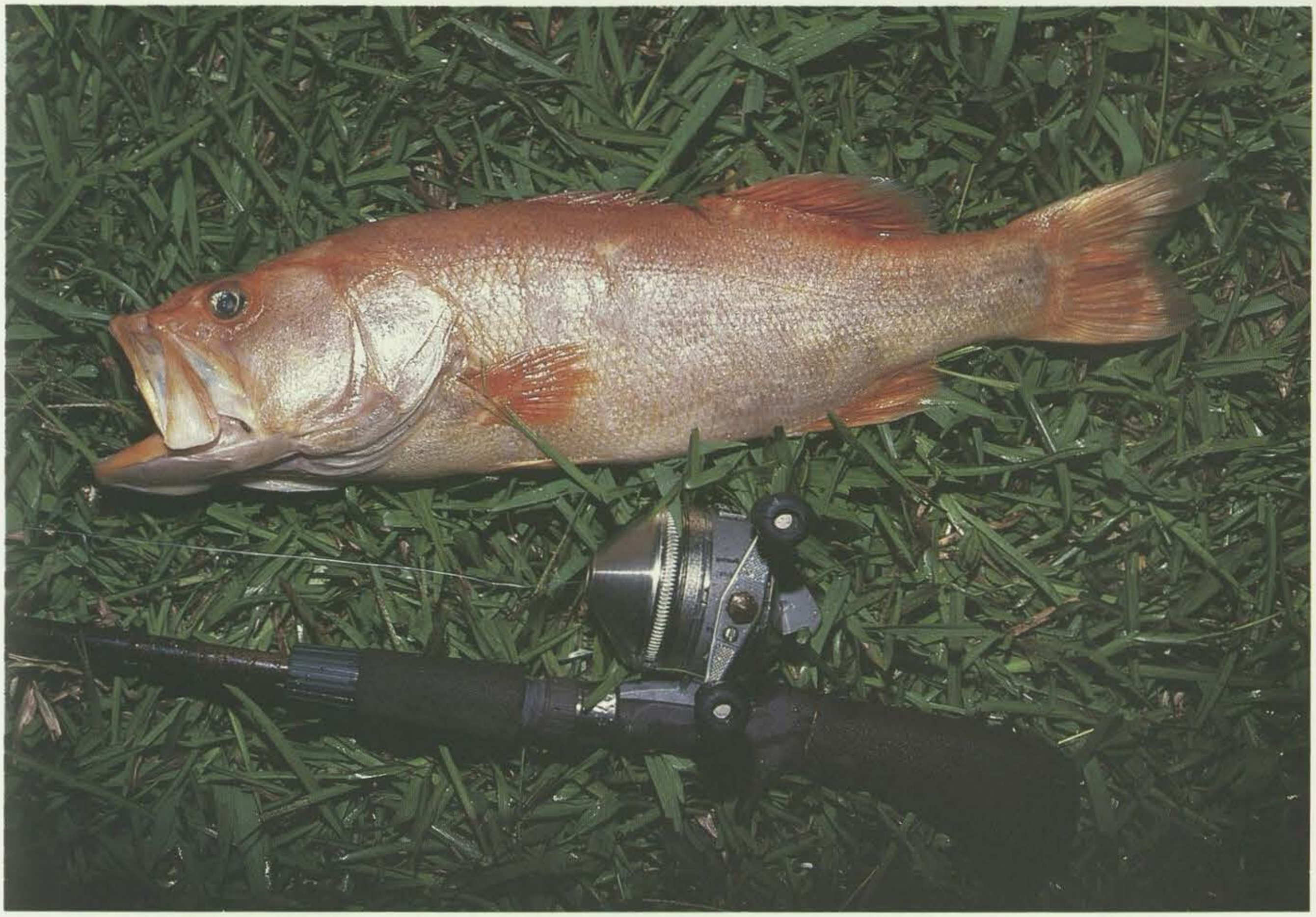
A doe and fawn feeding quietly along the shore had commanded Mattie's attention for most of the retrieve. A quick look to check on the status of the worm revealed, just a few feet from the rod tip, an orange fish with its nose right on the tail of her worm.

Again, not really sure of what she had seen, but certainly confident no bass would be that color, Mattie didn't give it much thought, nor did she make any specific attempts to catch this whatever-it-was. Mattie just kept fishing, whenever she had the chance, just like always.

At least until the day after Mother's Day.

It was different this time. Mattie had her husband, Patrick, or "P-Nut" as he prefers, and P-Nut's mother, Mrs. Anderson, along on this trip. Since no aspirations of catching this fish really ever existed, the previous encounters had nearly been forgotten.

With or without the mystery bass, the delayed Mother's Day outing would have been a big success. The anglers had already boated several bass and assorted bream. P-Nut's mother was having most of the luck, and rightfully so. It was, after all, her day. Though Mattie and P-Nut were concentrating on bass, it seemed as



Mattie landed this 2½-pound trophy orange bass against all odds.

though the lucky bass rod was the cane pole in Mrs. Anderson's hands.

In addition to bluegill and shellcracker, she had already taken several nice bass, including a 6-pounder that Mattie had just landed. Suddenly though, it was Mattie's turn in the limelight.

As Mattie recalled, "I reeled in just in time to help Mom land her big bass. When I looked over the side, there it was again, that orange fish, as if it had followed Mom's bass to the boat."

"I hollered at everyone to look, but the orange fish had disappeared," Mattie recalled. "All P-Nut could say was to quit filling his mother's head with those stories about some orange fish."

Without saying a word, Mattie flipped her bait in the general direction "this fish" was last seen. The bait settled for only a moment before something had a hold of it. No great battle ensued, just the typical struggle from a 2½-pound bass. As it neared the boat, however, Mattie could see that the fish was a strange, bright orange color.

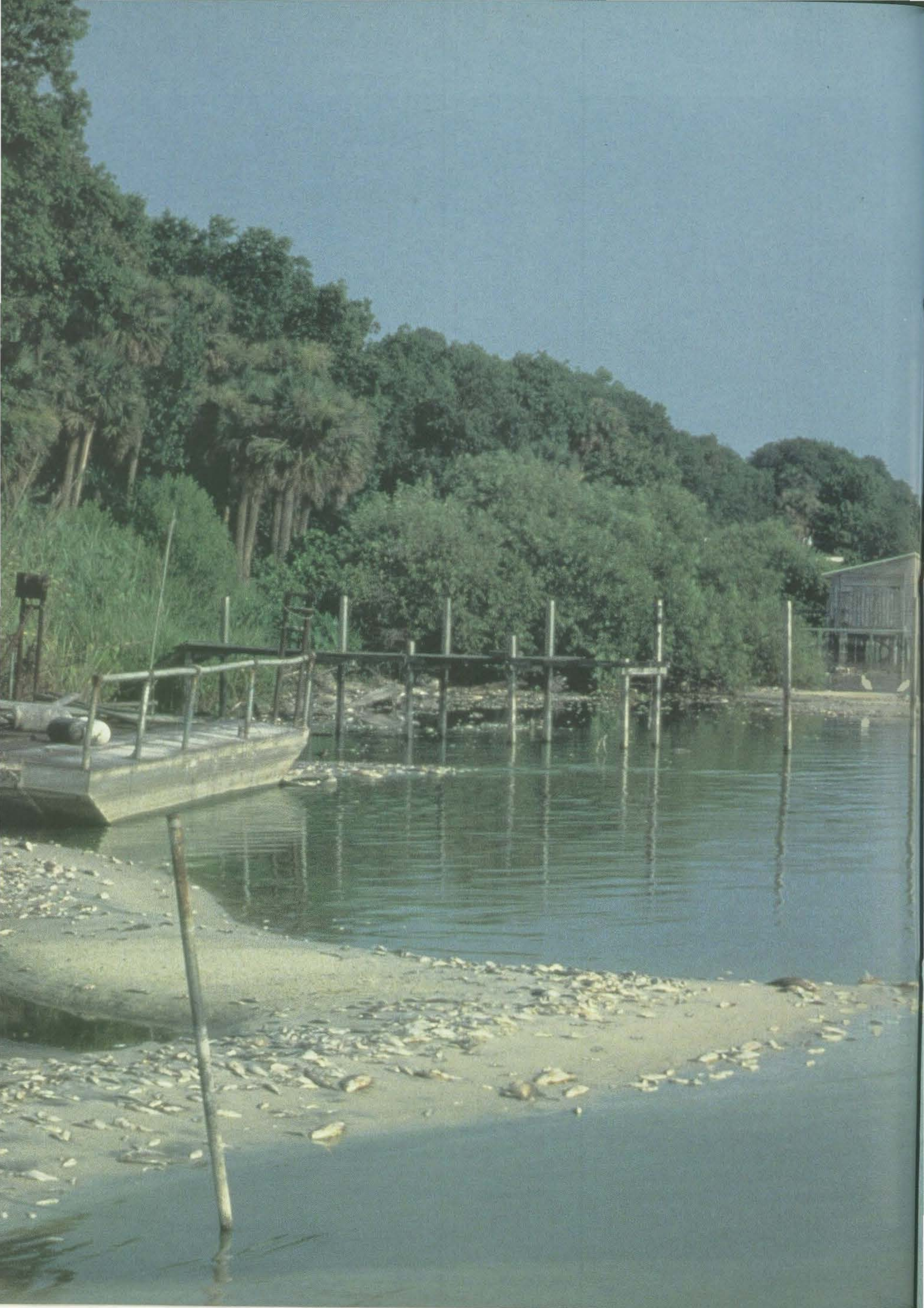
Yep, that's exactly what it was, an orange bass, right in the bottom of Mattie's boat. "What was that you were saying about stories and orange fish?" Mattie remembered asking her doubting P-Nut.

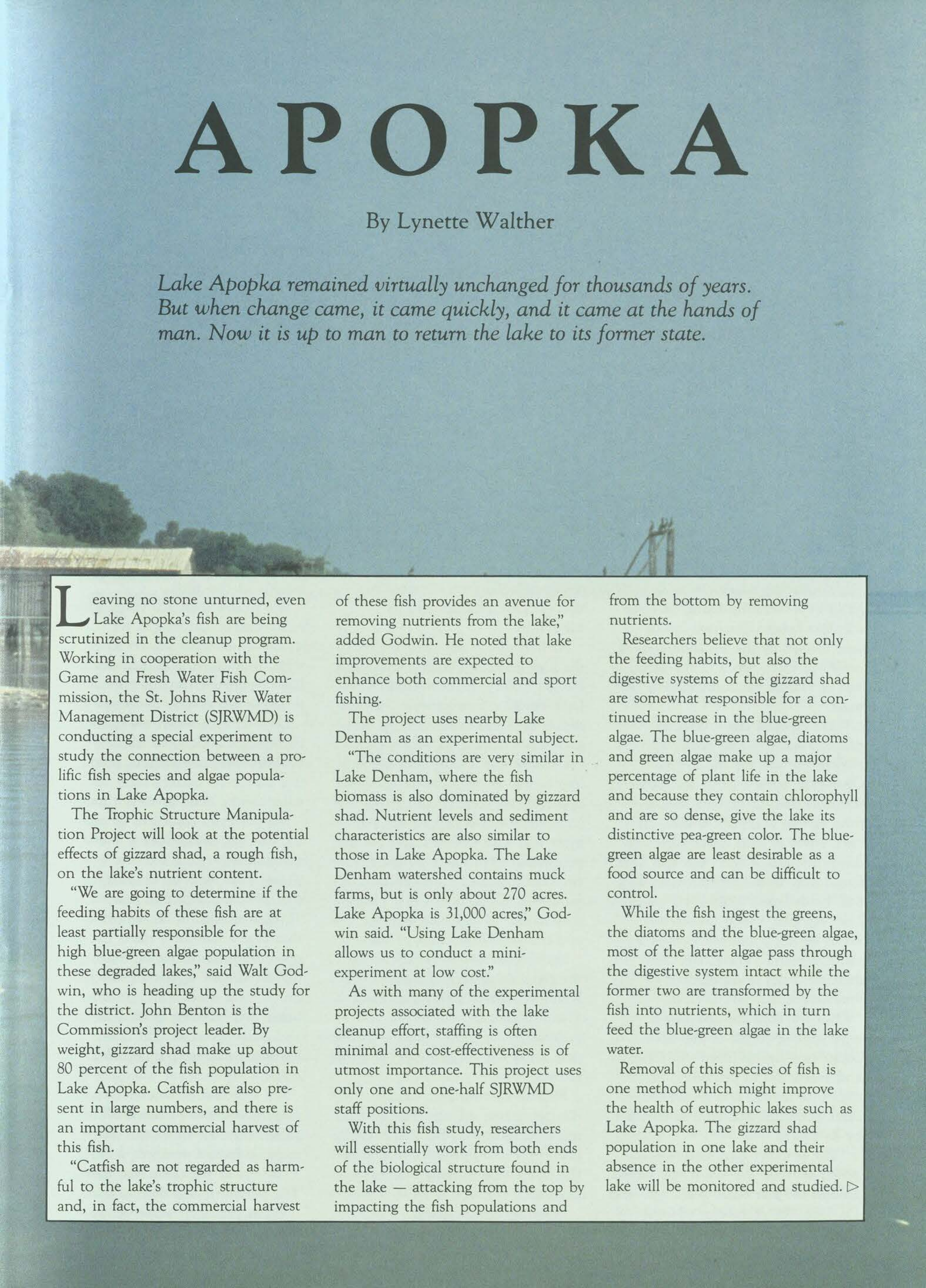
Despite everyone's surprise at the catch, Mattie decided it was only right to release her prize. As she began to remove the hook it was soon apparent that it was too deeply imbedded in the fish's stomach and too much damage had been inflicted for it to survive. Rather than release such an unusual fish, one that would certainly die, Mattie decided to have this unusual "trophy bass" mounted. Besides, who would believe a fish story like this without proof?

So, what bait does one choose to catch such a unique golden bass? Why, according to the only angler we know to have taken one, Mattie Louise Anderson, it's simple: a golden shiner.

Now, no one can argue that Mattie's "golden bass" is not truly a "trophy orange."

Lt. Jim Farrior is the public information specialist in the Commission's South Region.





APOPKA

By Lynette Walther

Lake Apopka remained virtually unchanged for thousands of years. But when change came, it came quickly, and it came at the hands of man. Now it is up to man to return the lake to its former state.

Leaving no stone unturned, even Lake Apopka's fish are being scrutinized in the cleanup program. Working in cooperation with the Game and Fresh Water Fish Commission, the St. Johns River Water Management District (SJRWMD) is conducting a special experiment to study the connection between a prolific fish species and algae populations in Lake Apopka.

The Trophic Structure Manipulation Project will look at the potential effects of gizzard shad, a rough fish, on the lake's nutrient content.

"We are going to determine if the feeding habits of these fish are at least partially responsible for the high blue-green algae population in these degraded lakes," said Walt Godwin, who is heading up the study for the district. John Benton is the Commission's project leader. By weight, gizzard shad make up about 80 percent of the fish population in Lake Apopka. Catfish are also present in large numbers, and there is an important commercial harvest of this fish.

"Catfish are not regarded as harmful to the lake's trophic structure and, in fact, the commercial harvest of these fish provides an avenue for removing nutrients from the lake," added Godwin. He noted that lake improvements are expected to enhance both commercial and sport fishing.

The project uses nearby Lake Denham as an experimental subject.

"The conditions are very similar in Lake Denham, where the fish biomass is also dominated by gizzard shad. Nutrient levels and sediment characteristics are also similar to those in Lake Apopka. The Lake Denham watershed contains muck farms, but is only about 270 acres. Lake Apopka is 31,000 acres," Godwin said. "Using Lake Denham allows us to conduct a mini-experiment at low cost."

As with many of the experimental projects associated with the lake cleanup effort, staffing is often minimal and cost-effectiveness is of utmost importance. This project uses only one and one-half SJRWMD staff positions.

With this fish study, researchers will essentially work from both ends of the biological structure found in the lake — attacking from the top by impacting the fish populations and from the bottom by removing nutrients.

Researchers believe that not only the feeding habits, but also the digestive systems of the gizzard shad are somewhat responsible for a continued increase in the blue-green algae. The blue-green algae, diatoms and green algae make up a major percentage of plant life in the lake and because they contain chlorophyll and are so dense, give the lake its distinctive pea-green color. The blue-green algae are least desirable as a food source and can be difficult to control.

While the fish ingest the greens, the diatoms and the blue-green algae, most of the latter algae pass through the digestive system intact while the former two are transformed by the fish into nutrients, which in turn feed the blue-green algae in the lake water.

Removal of this species of fish is one method which might improve the health of eutrophic lakes such as Lake Apopka. The gizzard shad population in one lake and their absence in the other experimental lake will be monitored and studied. ▷

A 14-pound largemouth bass rises to the surface of the crystal-clear water, and with a mighty lunge, knocks a lime-green mayfly from the delicate petals of a water lily. The spray hasn't even settled when the huge fish swirls off in another direction, its powerful body propelled through an underwater forest of lush vegetation. On the shore, a bison with a calf at her side reacts with a startled snort, but soon returns to drink the cool lake water. A 20-foot alligator eyes the scene with limited interest as it dozes in the afternoon sun.

The time and place?

It's Lake Apopka about 6,000 years ago. Although scientists aren't certain, many believe the lake has continuously held fresh water for some 6,000 to 8,000 years. The actual formation of the lake's bottom, a layer of limestone which has reacted to a variety of natural forces over thousands of years, could have taken place more than 40,000 years ago. If that is true, then Lake Apopka could be a "solution basin," as some scientists believe. Solution basins were formed by the sea thousands of years ago when much of the peninsula of Florida was inundated by sea water.

"Lake Apopka has a complex history," said Dr. Tom Scott, who studied the lake for the Florida Geological Survey. Scott and other scientists have taken core samples from various areas of the lake. He cited layers of marl which were laid down millions of years ago and were found only in the central valley area that holds Lake Apopka. He believes Lake Apopka, which is currently about 60 feet above sea level, is a solution basin. "There have been multiple cycles of dissolutions of limestone in the lake bottom."

Over the eons the lake saw a never-ending parade of life, from ocean creatures to freshwater fishes, and vegetation to prehistoric mammals that hunted and grazed the lake's perimeter and were sustained by its waters.

"You wouldn't have been too surprised at what you saw if you kicked around the lake 6,000 years ago," said Dr. Dave Webb, curator of fossil vertebrates for the Florida Museum of Natural History at the University of Florida. "Back then there were virtually the same plants and the same fishes and the same alligators. Alligators have been the same for 20 million years and aquatic systems haven't changed much in the past few million years."

Lake Apopka remained virtually unchanged for thousands of years. But when change came, it came quickly and it came at the hands of man.

The earliest human inhabitants of the area were Indians. "Apopka" is believed to be Indian for "potato eating place." Remains of Archaic-Indian campsites have been found throughout the region. Their impact on the lake was minimal, and these early inhabitants must have received the maximum benefits: plenty of food nearby, fresh water and a means of transportation. Evidence of extensive trading throughout the region suggests that dugout canoes were a popular form of transportation on Lake Apopka and its tributaries.

Such attributes attracted settlers to the area and a whole new chapter of Florida history was witnessed by Lake Apopka. Entrepreneurs saw the region as a gold mine in many ways and began tapping its wealth early on. Cattle, citrus and vegetable farming, as well as unlimited recreational opportunities seemed naturals for the area. Small towns popped up, and more and more people came. As the population grew, residents saw the need for increased transportation facilities and one of the first places they looked to was Lake Apopka and the Oklawaha chain of lakes.

Encouraged and underwritten by the state, dredging and canal building projects were begun early. There seemed no end to the possibilities for Lake Apopka, but we now know the consequences of those actions.

Fishermen considered Lake Apopka a bass nirvana. Lunker bass attracted sportsmen from all over the country. Fishing camps surrounded the lake and a thriving business developed around the sport.

"The fishing was good," remembered H.W. Bowness, who now lives in Ocoee. "We'd go out early in the morning, catch eight to 10 bass and come home around 10:30 a.m. We'd only keep what we needed."

A Lake Apopka fishing guide remembers vast numbers of fish and how he'd wager with his customers that they couldn't help but catch a fish on each cast. He'd always win.

"The fishing is so good and the water so clear, you can pick the particular bass you want to catch. This is the best freshwater fishing in the United States," claimed one Lake Apopka fisherman in 1945.

"Lake Apopka got better as time went on, until it started to deteriorate," said Ray Ussery of Winter Garden, who fished the lake for years.

"The bass population began to decline in the '50s, and then the crappie came in and then the shad," explained Jack Dequine who was chief of fisheries for the Florida Game and Fresh Water Fish Commission at this time.

Within less than 100 years, what had remained unchanged for thousands of years was no longer the same. Man came, and man changed Lake Apopka. Now it is up to man to return the lake to its former state.

Lake Apopka wasn't always one of Florida's most polluted lakes. What brought this once pristine, productive lake to its current state, and what can be done to turn it around?

Many factors combined to cause the lake's downfall. Nearly everyone involved with today's efforts to restore Lake Apopka would agree that 1947 was a pivotal year for the 31,000-acre lake. In September of that year a hurricane raked the lake, uprooting and destroying much of the submerged vegetation which grew on the lake bottom and provided a home and breeding ground for bass and other sportfish. The once-legendary fishing spot degraded quickly.

But it would be incorrect and somewhat unfair to blame all the troubles on the hurricane. Many negative factors were just waiting for a catalyst to put them into motion. The hurricane was that catalyst.

"What probably happened was that

State and local governmental agencies are cooperating to cleanse Lake Apopka and provide habitats for fish and wildlife.

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT

nutrients were being discharged into the lake, fertilizing it. When the hurricane uprooted some of the vegetation, it allowed the algae to take the upper hand. That was the beginning of the end. The submerged vegetation didn't have a chance," said Mike Coveney. He is technical program manager for the Lake Apopka Surface Water Improvement and Management (SWIM) program for the St. Johns River Water Management District (SJRWMD), the agency responsible for the restoration of the lake.

To trace the trail of woe to its source, we have to go back to 1887, when the Apopka Canal was completed. This canal diverted high-water runoff from Lake Apopka directly into Lake Beauclaire. The runoff originally ran through what was known as the Double Run Swamp. The canal was constructed to provide a route for transporting agricultural products to market. SJRWMD scientists now recognize that this "improvement" was the first piece of the puzzle they had to put together to unravel the mystery of Lake Apopka's demise.

Once the hydrology of the lake was altered, various other factors worked together to set the stage for the disaster of 1947. The years that followed presented a tableau of problems and potential troubles. In 1922 Winter Garden began to discharge inadequately treated sewage into the lake. Two years later, wastes from a citrus juice plant were added. The drainage of nearly a third of the lake's cleansing marsh area to create muck farms along its northern perimeter further compounded the problems. Muck farming was first tried around the turn of the century, but was abandoned after numerous problems were encountered. The unpumped fields soon reverted to wetlands. More than 40 years passed before the feat was attempted again. In the '40s, some 18,000 acres of Lake Apopka wetlands were diked and drained. Not only was the lake robbed of its natural marsh filtering system, but those newly created muck farms began to systematically discharge nutrient-laden water into Lake Apopka.

The muck farms were lower in elevation than Lake Apopka. Each year the farms were flooded during the off-season to control nematodes and to help slow the decomposition rate of the muck soils. The muck actually consists of organic matter that oxidizes at a rate of about one-third of an inch each year when exposed to air. Nearly 20 billion gallons of nutrient-rich, excess irrigation and flood control water were discharged from the muck farms into the lake each year — one third of the lake's volume!

Today such draining of wetlands would be met with incredulity, not to mention stiff penalties, but the importance of wetlands was not fully realized at that time. The draining and diking was done with the state's approval and encouragement to help develop what was then thought to be useless land.

"In today's climate you could not march in to purposely drain 18,000 acres to farm, but you have to ▷

remember that this was done during the war when food production was important, and wetland protection was not a priority," Coveney noted.

More bad news came in 1947, when the hurricane hit and the state conducted a major waterhyacinth spraying program. The dead hyacinths and other plants destroyed by the hurricane decomposed to form a thick layer of loose sediment on the bottom. Over the years that layer grew — up to 7 feet deep in some areas — further restricting and eliminating the possibility for regrowth of bottom plants. The average depth of Lake Apopka is now about 6 feet. Formerly the average depth was 8 to 10 feet.

A major algal bloom occured that same year, which further aggravated the water quality problems. Lake Apopka was crying for help, but like the proverbial drowning person who is thrown an anchor instead of a lifeline, Lake Apopka received more nutrient-rich wastewater from another juice plant. The incredible concentrations of nutrients fed the free-floating algae, clouding the water and precluding the re-establishment of bottom plants. Slowly, but surely, Lake Apopka's grasp on life loosened. The once-prolific largemouth bass began disappearing, and with them a thriving sport-fishing industry which the lake previously supported. The dozens of fish camps which surrounded the lake and drew fishermen from all over the country are down to one lone camp today. The lake's condition continued to worsen as the once-firm, vegetated lake bottom was transformed to loose, unconsolidated muck. Today, quality spawning and nursery areas for sport fish are almost nonexistent.

However, not all hope for Lake Apopka has been abandoned. Its economic, aesthetic and environmental values have been duly recognized, and in 1985 the Florida Legislature affirmed its commitment to the restoration of this once-beautiful body of water. At first a few tentative steps were taken, and now greater strides are being made to bring Lake Apopka back. The Lake Apopka Restoration Council was created by the Florida Legislature to assess cleanup plans. Along with the governing board, the council works with the SJRWMD and a variety of state agencies to coordinate cleanup efforts. In 1987 the Legislature mandated that SJRWMD, under the SWIM plan, coordinate the restoration effort. Goals of the restoration plan include reducing the pollution of downstream lakes, removing nutrients from the lake, reducing agricultural pollution, stabilizing the lake's bottom and re-establishing a variety of aquatic vegetation to help cleanse Lake Apopka and provide habitats for fish and wildlife.

"Successful restoration will require cooperation and commitment from the Legislature, the Water Management District and other state agencies along with local governments. And that's just what is happening. We've been able to pull together from different directions," Coveney pointed out.

There are 117,014 acres of non-inundated lands within the Lake Apopka drainage basin, with nearly 88,000 devoted to agricultural use. The muck farms are presently operating under SJRWMD consent orders which require the use of holding ponds or other devices or techniques to substantially reduce the amount of nutrients discharged to the lake. SJRWMD purchased 640 acres of muck farmland for construction of a marsh flow-way to filter pollutants from the water (see page 19). Pollution sources and other problem areas will continue to be identified by SJRWMD, and point- and non-point-source dischargers will be required to implement strict pollution reduction management-policies.

In addition to the imposition of external controls, internal changes must be made if Lake Apopka is to be restored. The lake has been altered so severely by human actions that it might not be able to recover on its own. A Trophic Structure Manipulation project (see page 15) may determine whether the gizzard shad population is contributing to the lake's nutrient problems. Results of that project may identify some appropriate remedial actions.

A wide range of solutions has been suggested, one of the most popular being a large-scale dredging of the lake. But while it may or may not solve the lake's problems, the dredging would simply be too expensive to conduct. Cost-effectiveness is the byword upon which all the proposals are being evaluated.

"Through SWIM we will determine the best ways to restore the lake, but we will likely be dependent on additional legislative appropriations to actually complete the restoration," Coveney concluded.

"The overall objective of the Lake Apopka Pilot Project is to evaluate the feasibility, projected effectiveness and cost of each proposed strategy and combination of strategies, and to recommend one or more strategies for implementation," states a 1988 interim SWIM plan for Lake Apopka. While most lake-restoration strategies target water quality improvements as the goal of the restoration effort, the return of the lake's biological diversity to its natural condition is the ultimate goal. Improvement of water quality is only the first step in the restoration process."

"We are going to restore Lake Apopka. We're not turning back now," vowed Mickey Sheffield, chairman of the Lake Apopka Restoration Council.

Lynette Walther is a public information specialist with the St. Johns River Water Management District in Palatka. She is also a free-lance writer specializing in outdoor recreation articles.

ST. JOHNS RIVER WATER MANAGEMENT DISTRICT

Muck farmland will soon be converted into a 950-acre artificial marsh that biologists hope will cleanse the lake.

The Marsh Flow-way Project

The Marsh Flow-way Project is about as elementary as it gets. Nature perfected the process millions of years ago, but this is the first time it has been applied by man on such a large scale. That is what makes it so revolutionary, so novel.

A marsh is nature's filtering device, and the 950-acre marsh which will be under construction this summer at the northwest corner of Lake Apopka will be just that, a mighty big filter. Although just a "pilot" or demonstration project which covers a small percentage of lakefront, project leader Larry Battoe of the St. Johns River Water Management District expects the plot to be able to circulate some 40 percent of the lake's water each year to help remove the nutrients that are the lake's primary problem.

"Even on this scale, it will be able to improve the water quality going downstream to protect waters such as lakes Dora, Beauclair, Eustis, Carlton and Griffin," Battoe said. "We expect to be acquiring more property. The Governor's budget included $5 million in 1989 and another $5 million is planned for next year."

This could possibly triple the land holdings available for marsh development.

"It's new; it's innovative. Wetlands have been used to treat sewage but never to clean up a lake. We're pretty convinced it's going to work. We just have to fine-tune the process."

The artificial marsh will be constructed on what recently served as muck farmland. But long before it was farmland, it was lake bottom. About one-third of Lake Apopka was drained to create such rich farmland. And though it has been cultivated since the 1940s, Battoe and other project planners expect it to bounce back rather quickly. In one case, an area which covers approximately 400 acres and has not been pumped to keep it dry, has naturally flooded. Long-dormant wetland plants, such as pickerel weed, have already begun to grow after only a few months.

"Some soils can retain active seed cultures for up to 50 years," Battoe added. "We are hoping we won't have to do much planting."

The project will require a six-part construction program. A pumping station, water-control structures, weirs, levee improvements, a flow-way canal, interior "terra-forming" (building ponds within the wetland) and some plantings will be necessary to complete Lake Apopka's marsh flow-way.

Delicate Balance

Species: Audubon's Crested Caracara
(*Polyborus plancus audubonii*)

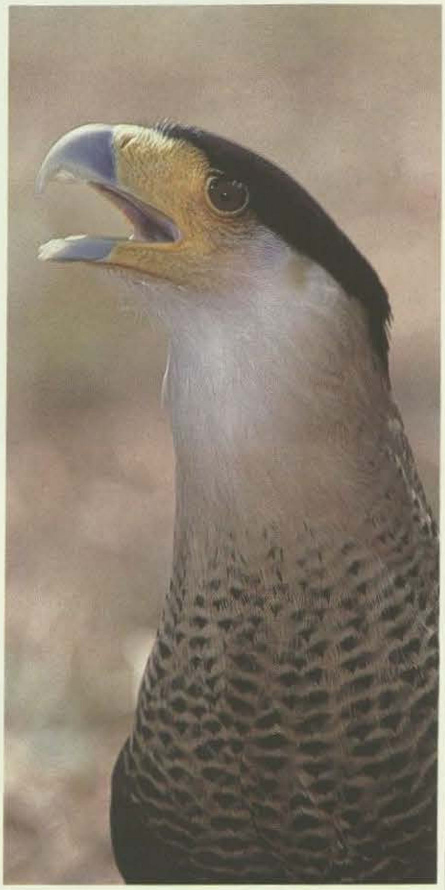
Florida Status: Threatened
Federal Status: Threatened

Unlike other members of the falcon family such as the peregrine falcon, Florida's rare crested caracaras receive little attention, and even less respect. Their Latin name, *Polyborus plancus*, refers literally to "highly varied gluttony" while also drawing attention to their flat feet. Zoologists refer to this raptor and some of its relatives as aberrant falcons. We expect falcons to fly fast, demonstrating their aerial prowess with spectacular maneuvers on long, high-speed wings. But flying caracaras resemble slow coursing harriers, or overloaded hawks. About the size of a red-tailed hawk, caracaras have a wing span of 48 inches, slightly larger than most hawks.

Their gourmand menus include carrion, baby birds, young mice, reptiles, amphibians, and insects. While sharing carrion with vultures, caracaras are dominant, and their white crown patch identifies them as "king of the vultures." Additional white patches on the tail and wings are easily spotted when the bird takes wing. Other features of the caracara designed to attract attention are the colorful patches of bare facial skin. The intensity of color changes with age and mood (young birds have pale pink or yellow patches).

Crested caracaras occur from Florida, Texas and Arizona, south to Argentina. The Florida population was separated from the main body of the species' range in earlier geologic time. Caracaras favor prairies and pastures where only scattered palm and oak hammocks or distant cypress strands interrupt the subtropical horizon. Although caracaras share this subtropical landscape with red-shouldered hawks, barred owls, short-tailed hawks, and swallow-tailed kites, they are rarely seen deep in the pine forests or cypress swamps where these other species nest. The caracara's range in Florida is largely limited to the center of the peninsula in the Kissimmee, DeSoto, and St. Johns prairies; scattered pairs nest as far south as Broward, Hendry and Lee counties. Historically the birds were widespread throughout this region, but a 1989 survey by the Archbold Biological Station and Florida Game and Fresh Water Fish Commission found fewer than 150 pairs, mostly in Glades, Highlands, and Okeechobee counties. Reacting to pressures from a recent series of cold winters and marketplace economics, landowners in these stronghold counties are converting vast areas of caracara habitat to planted forests of eucalyptus, citrus and pine. Only time will tell how long the remaining native prairies and ranchlands will support caracaras in the face of rapid habitat loss.

What little we know about the private lives of caracaras gives further cause for concern. Their bulky nests, well concealed in the tops of sabal palms, rarely contain more than two to three eggs, and most pairs fledge even fewer young. Low fertility coupled with the long period needed for young to develop into breeding adults precludes rapid recovery from calamity and further contributes to the possibility of extirpation. Hawks with similar traits have declined dramatically and only regained numbers after a decade or more of protection, research and intensive management.


MARESA PRYOR

We may be forced to accept that caracaras, like manatees, panthers and bears, will never be abundant in modern Florida. But continued conservation land purchases, wise land-use plans and practices can and will ensure that our unique caracara population persists with us for many years.

— Douglas E. Runde and Brian A. Millsap

Dr. Douglas E. Runde is the survey and monitoring coordinator for the Commission's nongame program. Brian A. Millsap is the nongame wildlife section supervisor.

Florida Wildlife's Cover Print Contest

Deadline For Submission of Slides: Monday, May 14, 1990

PRELIMINARY JUDGING: Send only 35 mm color reproductions of original art work to be considered. Artists may send up to three slides. Judges will view slides and select works for final consideration. The judges may ask to view original art, depending on slide quality.

SUBMISSION: Art work should preferably take up the whole slide area or have a black background. DO NOT shoot slides of framed work. Slides should be mailed First Class to: Art Editor, FLORIDA WILDLIFE, 620 South Meridian Street, Tallahassee, FL 32399-1600. **Please identify all slides by placing your name on the slide mount. Include your mailing address, Social Security number and a self-addressed stamped envelope with your submission.**

LIABILITY: The Commission will provide reasonable care for slides received from artists but cannot be responsible for any losses or damages. Artists should insure their slides if they feel such coverage is necessary. Slides will be returned after winning art has been published in the July/August issue.

SUBJECT MATTER AND SUGGESTED TREATMENTS: The main subject may be a native Florida species from any of the following categories:

> **Nongame Species** such as turtles, salamanders, butterflies and birds —songbirds, wading birds and raptors.
>
> **Game Species** such as white-tailed deer, wild turkey, bobwhite quail, mourning doves, ducks and largemouth bass.
>
> **Furbearing Species** such as otters, beavers and bobcats.
>
> **Endangered Species** such as the Florida panther, red-cockaded woodpecker, Key deer, American crocodile.

All works should emphasize the main subject with relatively simple backgrounds. However, landscape scenes or suggestions of habitat natural to the species shown may also be appropriate.

LAYOUT AND DESIGN: Submissions should follow a horizontal 11 ¼ x 16 ½-inch format with the right-hand half of the work designed appropriately to fit the FLORIDA WILDLIFE front cover size of 11 ¼ x 8 ¼ inches. Space should be allowed where the FLORIDA WILDLIFE logo can be placed within the upper two inches of the right-hand half of the work. The logo is designed to fit all the way across the top of the front cover. It is preferable that the logo background portion be one color or softly blended so as not to interfere with the logo. Colors must lend themselves to excellent quality photomechanical reproduction. Dull colors or a monochrome color is not advised.

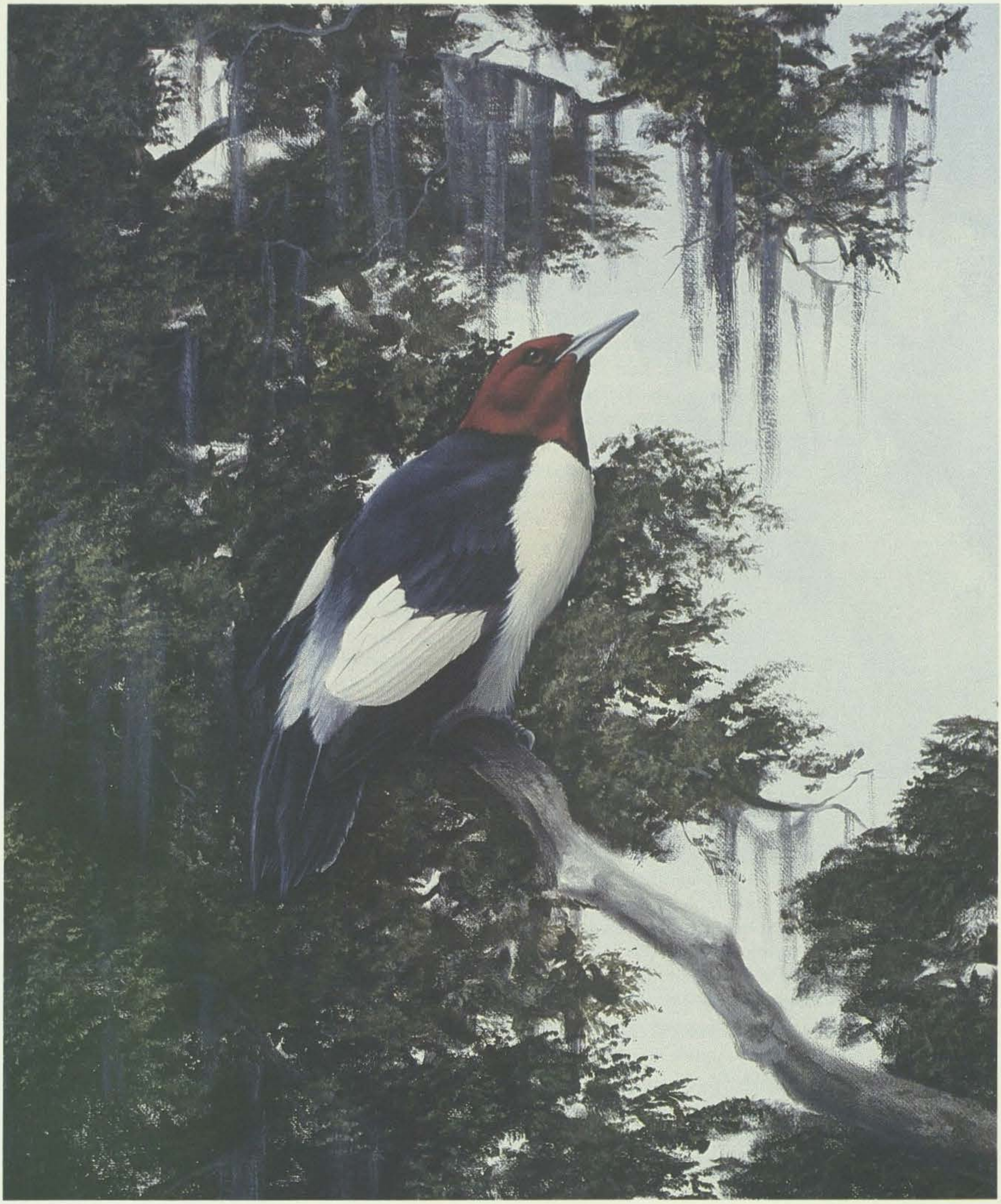
COVER SIZE: 11 ¼ inches vertical and 16 ½ inches horizontal (wrap-around cover). (A larger size is acceptable, but must have a usable image area proportional to 11 ¼ x 16 ½ inches.)

ARTIST SIGNATURE: The signature of the artist, if used, should be in an area no larger than ½ x 2 inches, and should preferably be near the lower right margin. Make sure there is ample margin between the signature and the edge of the art work.

CONTRACT TO PUBLISH: The artist whose work is selected for use on the cover of the July-August 1990 FLORIDA WILDLIFE and for the printing of a limited edition of 1,000 signed and numbered prints will be offered a contract that provides for payment of $500, specifies delivery terms, vests ownership of the original with the artist and provides that the Commission will have exclusive rights for reproduction of the original. These rights will include future rights to feature the work for promotion of subscriptions to FLORIDA WILDLIFE. The contract will also provide for the artist to receive 12 copies of the print, which may be considered as "artist proofs." Second and third place winners will receive a cash reward.

JUDGING: Entries will be judged on color, anatomical correctness, technical ability, design, texture and appropriateness to the magazine.

QUESTIONS? Feel free to write: Art Editor, FLORIDA WILDLIFE, 620 South Meridian Street, Tallahassee, FL 32399-1600, or call (904) 488-5563.



Southeastern Wildlife Exposition Artist of the Year

C. Ford Riley

Our featured artist, C. Ford Riley, has been selected the Southeastern Wildlife Exposition's 1990 Artist of the Year. The Southeastern, recognized as one of the leading wildlife art shows in the nation, will hold its eighth annual Exposition Feb. 16-18, 1990 in historic Charleston, S.C.

"After the Rain," a painting of a St. Johns River habitat near Riley's home, has been reproduced as the official print for the prestigious wildlife art exhibition. Breaking the tradition of featuring one specific wildlife species for their promotional print offer, the Expo panel selected this realistic landscape from the entries of 185 artists who will participate in the upcoming art exhibit.

Riley is a native Floridian and an enthusiastic outdoorsman who paints what he loves — our state's wild birds, animals and their habitats. His rustic studio is nestled in a hardwood hammock that borders the St. Johns River. Mature dogwoods and magnolias, wild azaleas, lush brackens and ferns surround his home, attracting the native and migrating bird species that Riley precisely renders in vibrant, rich acrylics or subtle watercolors. A student of ornithology, he shows keen observational skills in his meticulous vignettes, where his attention to the botanical details enrich the biological subjects in his paintings.

When rendering landscapes, the artist's style differs and he works with expanses of open space, allowing the viewers "to finish their own stories," to add their own interpretations of the scene.

He paints these contemplative landscapes with large brushes, working in the "drybrush" technique, rendering just enough soft details to set the tone of the vista. "I try to capture the mood of the terrain, but leave room for the viewer to complete the image," Riley said. In "Still Waters" he effectively captures the ambience of a tranquil sunset over Guana River Wildlife Management Area.

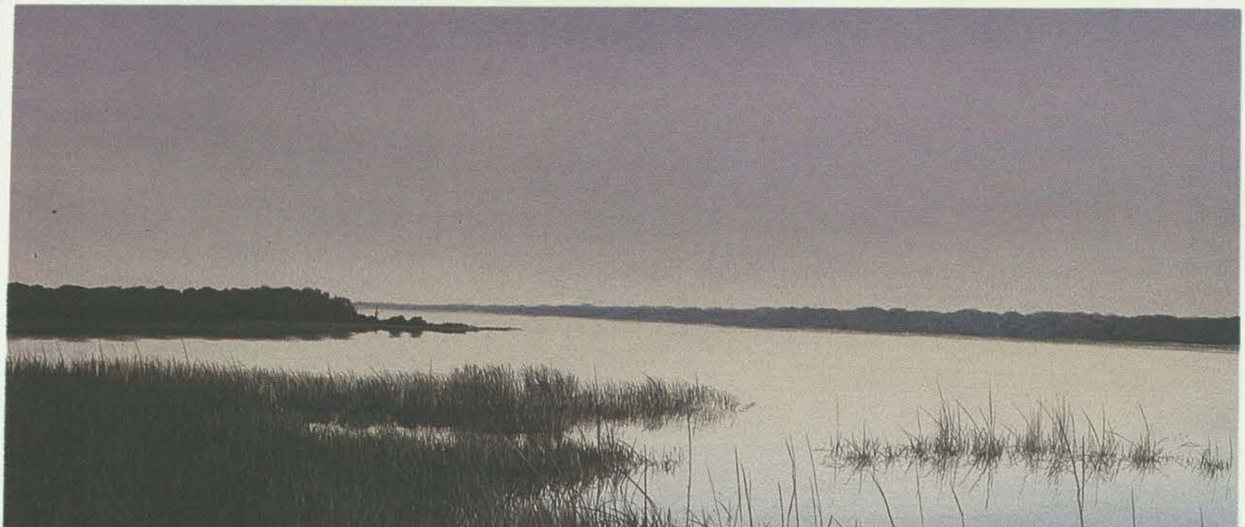
A keen wildlife observer and environmentalist, he knows and loves the ways of the woods. "A good wildlife artist knows the habits of his subject and gets out in the mud" to accurately depict habitats and wildlife. An avid hunter and fisherman, Riley is concerned about habitat loss and other environmental issues facing Floridians, especially in his hometown of Jacksonville.

"Since Jacksonville is the 'Bold New City of the South' it would be especially important if this city would work even harder for strict zoning, tree protection and other environmental issues."

"There is something in the blood of a really good wildlife artist that makes him or her want to share the wildlife that they enjoy with others. Really good wildlife artists are just as interested in protecting wildlife as they are in painting it," said Riley.

— Andrea H. Blount

◀ *Red-headed Woodpecker*



"Still Waters," Guana River WMA

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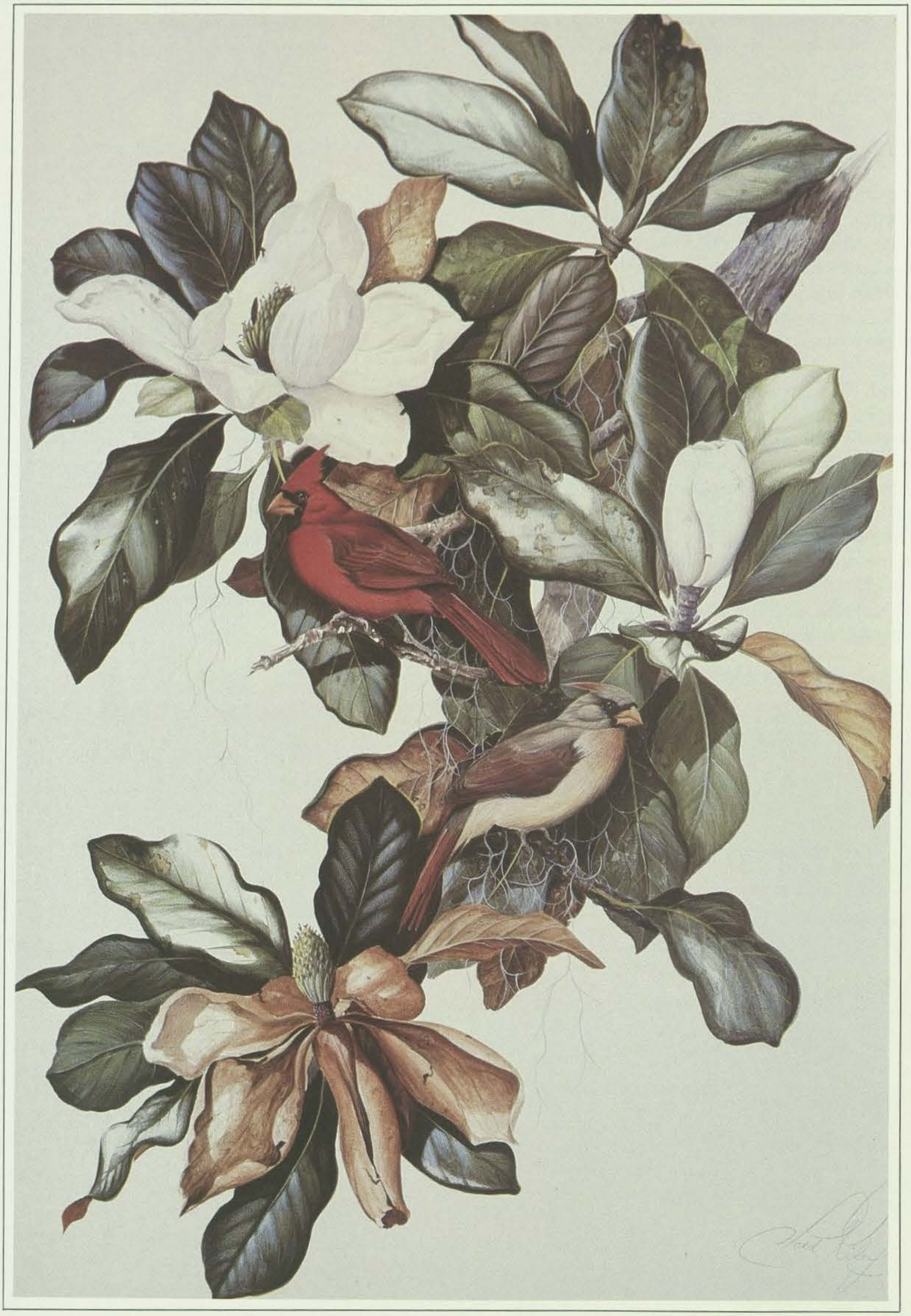


Cardinals in Southern Magnolias

Prothonotary Warblers

"After the Rain," Southeastern Wildlife Exposition 1990 Print

FLORIDA KEY DEER

Can The Florida Key Deer Be Saved?

By Mary Tebo

Natural landscapes in extreme south Florida can seem almost fanciful, filled with ethereal orchids and gaudy birds. Who knows what will appear next? Cruising the Florida Keys, you glimpse a tiny creature leap gracefully across the road far ahead — a creature familiar yet fabulous. It was a dog-sized deer, so small it might have escaped from a nursery school toy box. And it wasn't just your imagination. Very much endangered, the Key deer is for real.

The Key deer is a miniature race of the white-tailed deer that occurs only in the lower Florida Keys, primarily on Big Pine Key. Though nicknamed the "toy deer" for its endearing appearance and small size, the Key deer is much more than a toy. It is a living example of how a subspecies can evolve on isolated islands to meet the specific demands of its environment, thereby developing its own distinctive form. Unfortunately, evolution did not equip the Key deer to deal with the predators and hazards that modern times have introduced to its island havens: dogs, cars, steep-sided drainage ditches, and escalating land-clearing for vacation homes and convenience stores.

Thousands of years ago, as the earth thawed out after the last ice age, ocean levels rose and restricted a population of white-tailed deer to the southern islands of the Florida Keys — those between Key Vaca and Key West. Separated from other populations of white-tailed deer, these Key deer developed compact bodies that came to distinguish the subspecies as the

TOM WILMERS

smallest native deer in North America.

About the size of a collie dog, fully grown Key deer stand approximately 2 feet high at the shoulder. The average buck weighs about 85 pounds and the average doe, 60 pounds. The reason for their small stature is a matter for debate. Some biologists point out that many species get progressively smaller from north to south because individuals in warm climates don't need large body mass to maintain thermoregulation. From this perspective, the Key deer is the southernmost — and the smallest — example of the white-tailed deer. Other biologists suggest that the Key deer developed into a "compact model" that could economize on fresh water, which is scarce in the Keys. Furthermore, since there were no large predators native to the Keys, the Key deer had no need of a long stride to outrun pursuers.

Key deer have probably never occurred in great numbers. Big Pine Key is the historical center of their distribution, as it provides reliable sources of fresh water and its pine/palm communities and tropical hardwood hammocks provide adequate food. Deer swim back and forth among suitable islands in the lower Keys when water and food are plentiful. Still, Key deer have always been confined to these islands—a land area that would fit inside Greater Miami.

Considering their vulnerability and small numbers, it's a wonder Key deer managed to persist into the 20th century. Accounts of explorers and early settlers hunting these deer date back 400 years; sometimes they even harpooned them as they swam between islands. By the early 1900s, merciless poachers had pushed the number of Key deer down to fewer than 50 individuals.

Horrified at the slaughter of this unusual subspecies, conservationists rallied for its protection. In 1934, well-known biologist and artist J.N. "Ding" Darling drew a nationally syndicated cartoon depicting the plight of the Key deer: little deer fleeing big dogs and poachers. Saving the Key deer became a national concern, and in 1957 Congress passed a bill creating the National Key Deer Wildlife Refuge. The staff's vigilance against poaching and other threats helped the population recover to around 400 animals in 1973.

Since the 1970s, however, the Key deer population has steadily declined. The problems now looming are much more insidious and unblockable than overhunting—they are the problems that come with urbanization and increased contact with humans. Currently numbering fewer than 300 individuals, the tiny Key deer is further dwarfed by the massive pressures of land development.

Threats to Key Deer Survival

Habitat Destruction

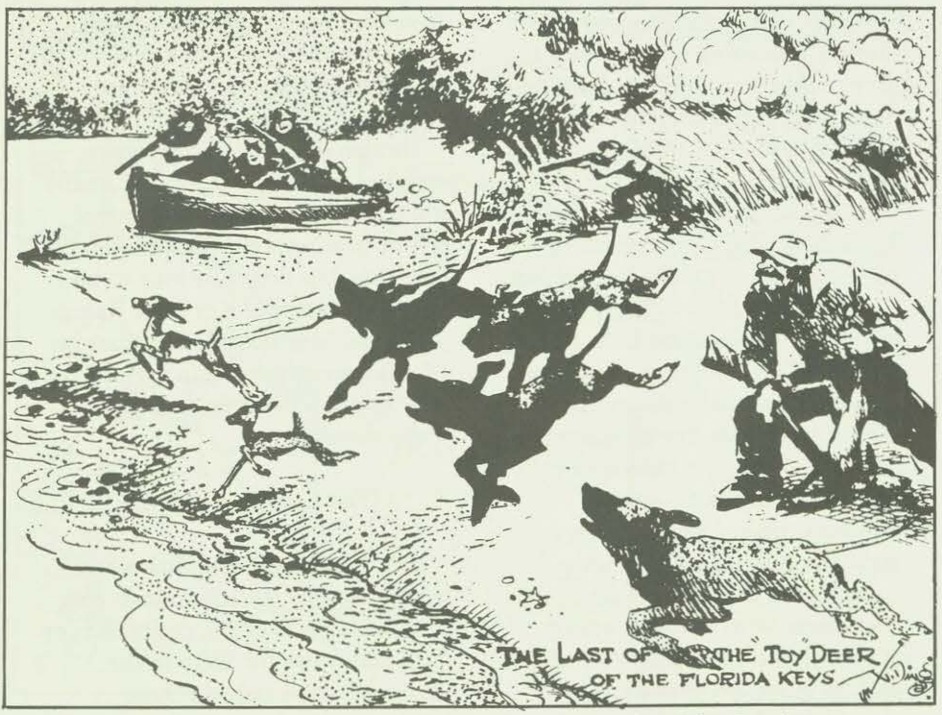
Key deer evolved to subsist on the native vegetation of the Florida Keys—mangrove, blackbead and palm — within a natural landscape that included hardwood hammocks, pinelands, and shallow, freshwater ponds. When development alters the Keys' natural environment, it decreases habitat quality for deer and other native wildlife. Not only does their food supply change, but drainage via canals and mosquito-control ditches drastically affects wetlands and other water sources.

In addition, road construction and high-density developments expose deer to an increased risk of death from human activities: collision with cars, predation from dogs, and drowning in ditches, to name a few. Residential and commercial fences often block deer from habitat and their traditional travel lanes.

Since most Key deer habitat is privately owned, preserving the Key deer depends on protection of deer habitat on private lands. The U.S. Fish and Wildlife Service and several conservation organizations are currently trying to acquire acreage to add to the National Key Deer Refuge. Refuge personnel are also applying land management techniques, such as prescribed burning, to enhance the growth of native vegetation.

Road Kills

Collisions with cars led to 82 percent of all confirmed Key deer deaths between 1970 and 1988: 862


THE LAST OF THE TOY DEER OF THE FLORIDA KEYS
J.N. Ding

In 1934 Ding Darling brought national attention to the plight of the Key deer in his cartoon of little deer fleeing big dogs and poachers.

▷

TOM WILMERS

deer. Were it not for the high mortality of Key deer on the highways that cross the lower Keys, most notably Big Pine Key, this subspecies might well have continued its recovery from the dark days of the 1930s rather than entering a decline. Biologists identify road kills as the number one factor directly restricting increase of the deer population; the population's birth rate cannot keep up with this death toll. More than 50 percent of all Key deer road kills occur on U.S. 1 and, ironically, Key Deer Boulevard, a highway traversing a wide expanse of prime deer habitat.

A 45-miles-per-hour speed limit has been posted where U.S. 1 crosses Big Pine Key, in the hopes that motorists will drive more slowly and watch more vigilantly for deer. However, signs alone can't enforce speed limits—many motorists ignore them and barrel right through the caution zone.

Biologists are also trying to coordinate with transportation authorities to pave grass medians and lay gravel on grassy road shoulders. This way deer won't seek these spots for grazing.

Dogs

These seemingly docile pets, when allowed to roam free, can be vicious predators of Key deer. Not only do dogs chase down and kill deer themselves — particularly vulnerable fawns — but they often drive deer onto roadways, where cars strike them, or into steep drainage ditches, where they are trapped and drown.

Though dog owners are legally required to confine their dogs, many still roam free. An animal-control officer now runs a dog pound on Big Pine Key, but dogs continue to take their toll. National Key Deer Refuge personnel have observed as many as 14 dogs running loose in various Big Pine Key subdivisions during a single morning.

Feeding by Humans

Good intentions backfire when people stop by the roadside to give Key deer potato chips, or set out pet food and water for them in the backyards. Not only do these handouts glut deer with inappropriate food, but such "kindness" can easily kill deer by drawing them to hazardous areas such as highways and subdivisions. Gathering unnaturally high concentrations of deer also has several other effects: it disrupts the deer's social behavior and increases inbreeding as well as the spread of disease and parasites, all problems that lead to lower reproductive rates. Ironically, supplemental food isn't even good for deer; they require a certain level and variety of native plants in their diet.

It is difficult for people to check their inclination to increase contact with the appealing Key deer. However, the realization that artificial feeding is contributing to the Key deer's decline should be enough to encourage humans to find an alternative, more effective way to work for the Key deer's survival.

How You Can Help

There are many ways people can work for the Key deer's welfare. They can contribute to efforts to acquire habitat. They can promote awareness of the need to drive slowly on highways crossing Key

TOM WILMERS

When roadside vegetation is cut back, it allows drivers a better view. Foliage clearing has begun along several miles of U.S. 1 and will soon begin on Key Deer Boulevard.

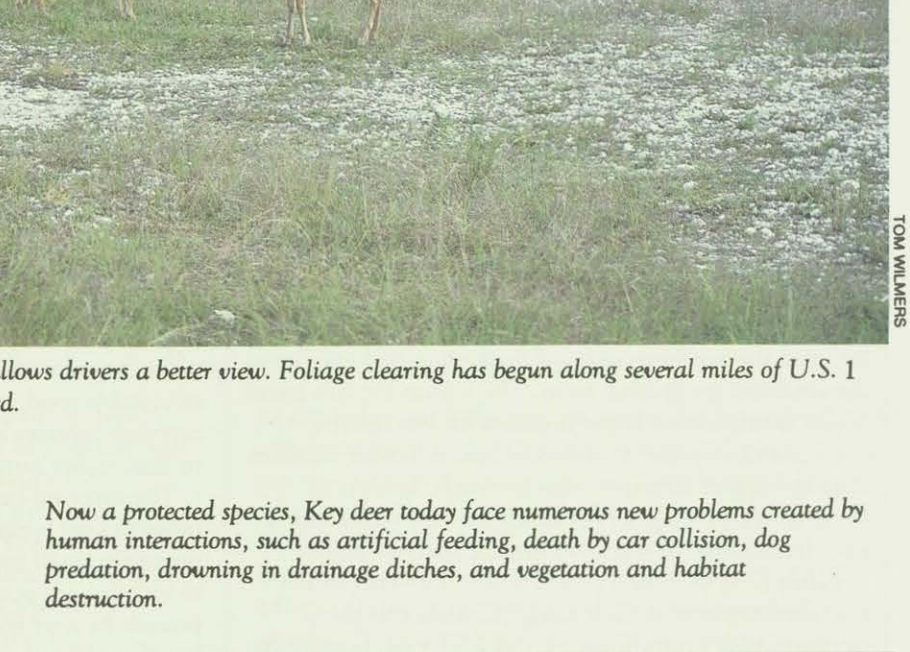
deer territory. They can persuade neighbors to fence dogs, and educate the public about how important it is not to feed and tame deer.

The Key deer is a special product of island ecology. It is as rare and unusual as the subtropical environment that shaped it. More than a fanciful, fairyland toy, the Key deer is a real animal facing the real threat of extinction. Perhaps humans, having discovered its island havens, can learn to live with and preserve this distinctive subspecies.

For more information on the Florida Key deer, write: Don Wood, Endangered Species Coordinator, Florida Game and Fresh Water Fish Commission, 620 S. Meridian Street, Tallahassee, Florida 32399-1600. Or, contact the Refuge Manager, National Key Deer Refuge, P.O. Box 510, Big Pine Key, Florida 33043.

Mary Tebo was the assistant editor for FLORIDA WILDLIFE until recent travel plans and free-lance writing assignments demanded her full-time attention. Watch for her byline in future issues of this magazine.

Now a protected species, Key deer today face numerous new problems created by human interactions, such as artificial feeding, death by car collision, dog predation, drowning in drainage ditches, and vegetation and habitat destruction.


KEY AV.
KEY ST.
SPOT

Cartoon by John Roberge

Ask Your Biologist

Our readers are naturally curious about ongoing Commission research, management techniques, seasonal harvest fluctuations of Florida's resources, habitat loss and other environmental issues. This is the second "Ask Your Biologist" column to appear in this magazine.

Dear Wildlife Biologist,

Can you tell me why deer are so such smaller in Florida than in Mississippi, South Carolina and other southern states? I thought there was good forage in at least the northern part of the state.

An Interested Sportsman
Ocala, Fla.

Dear Interested,

Warm-blooded animals of the same species tend to be larger in the northern parts of their range and smaller in the southern geographic areas. The reason for this trend is that animals need larger bodies with less relative surface area in order to conserve heat in colder climates than in warmer climates. This principle, known as Bergmann's Rule, generally holds true for white-tailed deer from north to south within the species' range.

Adult (2 ½ years and older) male white-tails of the northern extreme of their range (Canada and the northern U.S.) commonly exceed 250 pounds and have been documented over 500 pounds. But, adult bucks in the lowlands of Peru (the southern range extremity) average only 60 pounds.

Adult white-tailed bucks in Florida normally weigh between 75 and 175 pounds and average 125 pounds. Extremes of 44 to 248 pounds have been documented for adult Florida bucks. Adult does in Florida normally weigh between 80 and 100 pounds and average 90 pounds. In other southeastern states, including Mississippi and South Carolina, deer can be found within these weight ranges. On the average, however, Florida white-tails are not as heavy as those found elsewhere in the southeast.

The difference in average weights is due primarily to habitat quality. Much deer habitat in Florida can be characterized by having low soil fertility. Consequently, much of the deer forage here is of low quality as compared to other southern states. And, deer that consume food of low nutrient value simply do not grow as large as those consuming high nutrient food. That phenomenon is even evident within our state. In those portions of Florida where relatively high soil fertility supports good quality forage, deer are heavier on the average. An example of this, as referenced in your letter, exists in extreme northwest Florida where higher quality soils generally produce some of the state's heaviest deer, with many adult bucks exceeding 200 pounds.

But, soil fertility and forage quality are not the only factors that influence deer weights. The relationship of deer population density to the carrying capacity of the habitat is also important. Weights of deer in populations below carrying capacity will average heavier than for populations which exceed carrying capacity. That cause-and-effect relationship is relatively simple. Deer in populations too large for the supporting habitat must compete among themselves for limited quantities of suitable food, so as populations grow to the point of carrying capacity and beyond, weights do go down due to inadequate nutrition.

The carrying capacity factor accounts for the wide range in deer weights that we sometimes find within a relatively small geographic area of the state. In fact, deer in low density populations are known to average 20 pounds heavier than those in high density populations less than 10 miles away even if they occupy similar habitats.

So, to summarize the answer to your question, Florida deer are generally lighter than their northern counterparts due to their southerly position within the overall range of the species and the relatively poor soil fertility over much of the state. Also, extremely light deer from some locales within the state are likely the result of populations that have exceeded habitat carrying capacity.

Vic Heller
Assistant Director,
Division of Wildlife

Address questions to "Ask Your Biologist" care of FLORIDA WILDLIFE magazine, 620 South Meridian Street, Tallahassee FL, 32399-1600. Not all questions can be answered in this column and some will reflect a combination of questions.

The Art of Catching and Cooking Shrimp, By Lynette Walther

The Art of Catching and Cooking Shrimp contains a wealth of information about catching and cooking these delectable decopods. The author includes life-history information about the commercially important white shrimp, brown shrimp and pink shrimp, and the distinguishing characteristics of each. There are tips on where and when to go shrimping, as well as specifics on catching shrimp with dip nets, drop nets, cast nets, seine nets and shrimp traps. The how-to-catch-'em section also includes details on setting the trawl for the optimum catch. There are several simple diagrams and useful line drawings that illustrate these different techniques effectively.

There's an informative chapter on handling, buying and sorting that also includes canning, freezing and other preparation tips. The book features more than 150 delicious-sounding recipes for shrimp main dishes, appetizers, salads, sandwiches and soups. These culinary specialties range from shrimp pilau to savory shrimp grill and rich chowders and gumbos. The instructions are simple and the mouth-watering recipes seem easy to prepare.

The author has sailed the waters of the Bahamas, Florida and Georgia and seems to know and love the recreational aspects of shrimping and crabbing. She wrote an outdoor-oriented cooking column for seven years and her articles have appeared in numerous newspapers and magazines. Simple pen and ink illustrations by David G. Coston enhance the text of this paperback book.

The spiral-bound book costs $7.95 and is distributed by Liberty Publishing Company, Inc., Suite 202, 440 South Federal Highway, Deerfield Beach, FL 33443. Library of Congress number 86-0611720; ISBN 0-911145-08-7.

— Andrea H. Blount

Crocodiles and Alligators

Edited by Charles A. Ross and Dr. Stephen Garnet

The crocodilians of the world come to life in the pages of *Crocodiles and Alligators*, where an international panel of scientists and professional photographers provide a comprehensive look at the 22 living species and subspecies of the crocodile family. The editors introduce the reader to crocodilians with a section on evolution and biology. In these chapters the fossil history of crocodilians is traced from a common ancestry with dinosaurs and birds to today's highly specialized aquatic predators. Colorful illustrations support the text in a complete "anatomy lesson" revealing a body structure adapted for highly efficient function. A descriptive taxonomic key, along with world distribution maps and color illustrations, gives the reader a good representation of crocodilians throughout the tropical and temperate regions of the world.

In the second section of this book, crocodilian behavior is explored along with the environments that serve to shape these behavior patterns. Vivid photographs accompany a description of feeding habits followed by a chapter that turns the tables to focus on crocodilians as the prey rather than the predator. Several topics deal with crocodiles and alligators as they interact with their own species including vocalization, territoriality, dominance relationships and courtship. A detailed description of nesting ecology is provided for selected crocodilian species. This section is completed with an overview of various habitats emphasizing the ecological importance of crocodilians and the urgent need to halt destruction of their habitats throughout the world.

Appropriately, the book's final section addresses the relationship between crocodilians and humans. A review of crocodiles and alligators in human history reveals that our fascination and respect for these reptiles is as old as our most ancient cultures. Respect is a key word in the subject of crocodilian attacks on humans. The chapter dealing with this subject provides a history of unfortunate crocodilian/human interactions but also brings out many precautions that could prevent future attacks. The commercial utilization of alligators, primarily for their hide and meat, is discussed in several chapters. The chapters deal with crocodilian hunting, ranching and farming, and the relationship of these practices with the fashion leather trade. An interesting description of the complex hide-tanning process is included. Finally, through an overview of the conservation and management of crocodilians, the book outlines the worldwide effort to manage wild populations wisely and regulate harvest and trade closely. The reader will finish this section with a better understanding of our role in the past, present and future world of crocodiles and alligators.

Crocodiles and Alligators contains over 200 photographs taken by professional nature photographers, many full page, and over 250 color illustrations, maps and diagrams. Information in this book is not presented on the level of a scientific journal. The authors seemed to focus more on making the text easy to read and understand, even for the layman crocodile enthusiast. The book is available for $35 through Facts On File, Inc., 460 Park Avenue South, New York, NY 10016, or phone toll-free 1-800-322-8755.

— Nick Wiley

GFC

Hunting Accidents

By Lt. Stan Kirkland, Northwest Region

Every year millions of hunters take to the woodlands, fields and marshes of North America in pursuit of their favorite game animals. The overwhelming majority of these outdoor enthusiasts are safety-conscious and hunt a lifetime without the blemish of a firearms accident.

In Florida an estimated 300,000 hunters annually venture afield. Over the last 10 years the Game and Fresh Water Fish Commission has recorded 331 accidents with 63 fatalities among Florida hunters. That is an average of 30 accidents and roughly six fatalities per year.

Assuming hunter numbers have remained relatively constant during this 10-year period, the accident rate is approximately one per 10,000 hunters. Obviously, we would be better off if there were no accidents and the image of hunting would certainly be less tarnished, but hunting in the Sunshine State is safer than many other outdoor activities.

The fact remains that hunting accidents do occur. They happen to hunters of all ages and no user group is immune. They can happen just as quickly to a dove hunter as a deer hunter. Purists such as muzzleloaders and bow-and-arrow hunters are not off-limits either. The sad part is, almost all accidents are preventable.

The annual accident rate in Florida is approximately one per 10,000 hunters.

In an effort to gain a better understanding of how hunting accidents occur, the following are two victims' accounts of how they were involved in hunting accidents.

John Peairs has been hunting since he was 8 years old. Now 26, he has become quite knowledgeable about wildlife, particularly white-tailed deer. He describes himself as both a still-hunter and a dog-hunter. It was on a December day when he, his 14-year-old stepdaughter and three hunting companions went deer hunting.

Just after noon they released a dog on a fresh deer track. A buck bounded near John a few minutes later and he fired his rifle and missed. Another dog was put on the deer, and John's hunting buddies got on their stands. Although John didn't have a CB radio to communicate with his hunting party, he and his stepdaughter headed up a ravine in his four-wheel-drive truck to a stand he wanted to take.

He got within a few feet of his intended spot when he heard a loud pop, a noise he thought was a rod knocking in the engine. The truck stopped running, and John, thinking the truck had broken down, opened the door to get out and assess the damage. When he stepped out, his right leg crumpled, and he fell to the ground. Little did he know that both he and his stepdaughter had been hit by a rifle bullet fired by one of his hunting companions. Unaware that she had been wounded, John's stepdaughter went for help, and within a few minutes his hunting companions had him in a truck and headed for a hospital 35 miles away. It was only then that the stepdaughter realized she had also been struck in the left foot and leg by bullet fragments. Her injuries were minor compared to John's.

John was apparently struck by a .270-caliber bullet weighing 135 grains. John estimated his truck was 400 yards from the shooter, but the bullet had little difficulty penetrating the truck's outer and inner door walls before striking them. The injury to John's right lower leg was severe; the bone was shattered. Doctors have operated on John's leg twice, and he yet may face more surgery if complications arise. Doctors have advised John that he faces at least nine months in a leg cast and if things go well, it will probably be two years before he can return to work.

When a wildlife officer and a sheriff's deputy investigated the accident, the cause became apparent. John's three hunting buddies did not know where he was and one of 11 shots fired at the fleeing deer struck the truck.

Tom Rodgers (not his real name) liked to do two kinds of hunting. He enjoyed duck hunting and wild hog hunting with dogs because of the excitement involved. Growing up as a resident of one of Florida's coastal counties, Tom spent many pleasurable hours hunting out of blinds for wood ducks, ringnecks and bluebills which frequented the area.

On a cold, December afternoon in 1975, Tom and a hunting companion decided to duck hunt on a familiar coastal marsh. They drove two miles down a sandy road, parked and then walked another mile through waist-high marsh grass and crossed two sloughs to get to their intended hunting spot.

They immediately spotted a drove of ringnecks just beyond gun range out in the bay. Tom crept forward and stopped behind a wax myrtle bush while his hunting buddy crouched behind a small bush seven or eight feet behind him and slightly to his right side.

Then, as if by a stroke of luck, a large boat came down the bay and the ducks started swimming closer to shore, 40 yards out, then 35. Without warning, Tom felt his lower right side give way and, what seemed like seconds later, heard the sound of the gun. Tom had been shot. He collapsed, and his friend, not wanting to believe what he had done, rushed to his side.

By this time, the sun had set, but there was still light enough to see. The friend took a quick look and realized how badly Tom was injured. The load of 2 ¾-inch magnum 4s had hit Tom in the lower right-hand side of his back, just over his kidney. Tom remained conscious, and although his lower back throbbed, he didn't know how close to death he was. The friend, now almost in a panic, packed the gaping wound with his sweater and used a wide belt Tom was wearing to hold the sweater in place. Later, at the hospital, doctors found 67 pellets embedded in the belt. The belt, they believed, saved Tom's life.

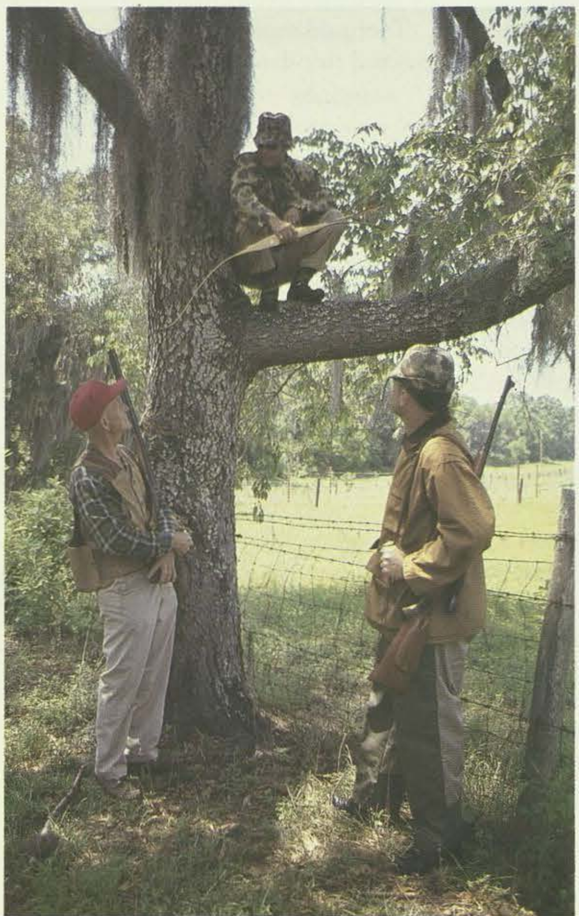
Tom was 6 feet tall and weighed 175 pounds. His friend was a couple of inches shorter and weighed 250. But the friend could not find a workable way to get Tom out to the car. Tom was alternately carried and dragged a quarter mile before the friend gave up and went for help. Tom was left on a dry bank under some bushes.

Before long, Tom's friend returned with a rescue team and ambulance. Although it was pitch-dark by then, Tom remained awake as he was carried out on a stretcher. When he arrived at the hospital, doctors set to work to repair his injured body.

Tom's injuries were severe and he lost a tremendous amount of blood. He was given 32 units of blood during his hospital stay which lasted 34 days. He spent 17 of those days in intensive care. Doctors tried to save his right kidney, but it was so badly damaged they had to remove it. To make matters worse, Tom caught the flu a week after the accident, and his fever climbed to 105 degrees, making him delirious.

In addition to the physical damage to Tom's back and internal organs, the blast caused nerve damage to his right leg. Tom lost almost all use of the leg for several months, and during this time the leg shriveled to less than half its original size.

But Tom persevered. The 28-year-old Vietnam veteran fought back and struggled for two years. He regained most of the use of his leg and eventually built it back to a respectable size. Although he lost a kidney, his body has made a ▷



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Nearly 80 percent of the accidents in Florida during the last five years were self-inflicted through careless gun handling, victims mistaken for game, or victims in the line of fire beyond the target.

remarkable recovery. Tom admits there's not a day that goes by that his body doesn't ache, but he's learned to live with the pain.

Tom's life was undeniably altered. He was forced to file for bankruptcy because he couldn't maintain a fledgling business he had begun. All this, because his friend was careless with a firearm and committed the cardinal sin against safe gun handling: not keeping the muzzle pointed in a safe direction. What a senseless tragedy!

Even though John and Tom never knew each other, they shared something in common — both were victims of carelessness. Some people obviously will try to explain away John's accident by saying he had no way to communicate with his hunting party so the other members had no way to know where he was.

But it is the responsibility of every hunting party member, no matter what type of hunting they're doing, to know the location of the other members. A buck deer is hardly worth a human life or the enormous medical costs surviving victims have to face.

A close look at the causes of hunting accidents in Florida during the last five years shows that nearly 80 percent of the 194 accidents either were self-inflicted through careless gun handling (33 percent), the victims were mistaken for game (23 percent) or the victims were in the line of fire beyond the target (22 percent). The remaining 22 percent of the accidents fit into a half dozen other causes including discharging weapons while entering or exiting vehicles and falling, stumbling or dropping firearms.

How can we eliminate the majority of hunting accidents?

To a degree, the issue of persons being mistaken for game has already been addressed. The Florida Legislature passed a blaze orange hunting bill in 1985 that requires all deer hunters on wildlife management areas to wear a minimum of 500 square inches of blaze or hunter orange material.

The other category, victims in the line of fire beyond the target, probably will never be eliminated. This is the broad category in which John's accident falls. More hunters wearing blaze orange and knowing the locations of others in their hunting party are partial solutions.

In 1989 the Legislature took an additional step to reduce hunting accidents. It passed a law, effective in 1991, requiring anyone born on or after June 1, 1975 to pass a hunter education course before he or she can buy a hunting license.

"The logic behind such a move is that we'll be training the hunters of tomorrow," said Capt. Ed Tyer, the Florida Game and Fresh Water Fish Commission's statewide hunter education coordinator.

"Hunter education training emphasizes safe gun handling. It takes a person from the time he first thinks about picking a firearm, to actually using it and then putting it safely away. Specific laws like blaze orange certainly help, but they only affect line-of-sight and mistaken-for-game accidents."

Tyer believes that mandatory hunter education will result in a drop in hunting accidents among young hunters as they grow older. While that drop would be noticeable in states with 100-200 accidents per year, he said, it might be harder to detect in Florida.

Tyer said most states that have enacted mandatory hunter education laws have experienced tremendous drops in hunting accidents in the targeted groups of young hunters, some by as much as 75-80 percent.

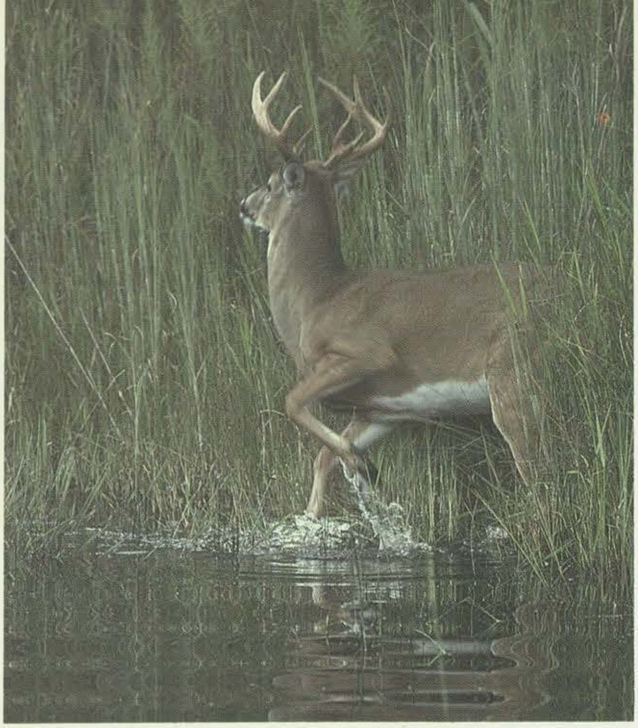
He cited a report he had prepared, based on a survey of states with required training, and the figures were eye-opening. Colorado enacted mandatory hunter education training in 1970 and a blaze orange requirement for all big game hunters. In 1984, hunting accidents dropped by 51 percent compared to the nine years preceding their hunting safety laws.

Other states also note dramatic reductions: Idaho, 86 percent; Kansas, 41 percent; Montana, 14 percent; New York, 62 percent; Pennsylvania, 78 percent and so on. Tyer estimates there are 25,000 hunters 16 years of age and younger who will be affected by the law. He said 10,000 persons per year currently are going through the voluntary program, and he believes the additional young hunters can easily be absorbed by the network of instructors and class schedules.

This certainly seems to be a small price to pay.

Lt. Stan Kirkland is the public information specialist in the Commission's Northwest Region.

Tracking Wounded Game



WILLIAM WEBER

By Carolee Boyles-Sprenkel

I'd gone hunting with a friend, to a place he thought I'd have a chance at a decent-sized buck. Since I'd never shot anything larger than a spike, I was excited.

Through the late afternoon, nothing moved. Then, at the very end of legal shooting hours, my patience was rewarded when I saw a deer slipping through the trees. I couldn't tell just how big it was, because it was so far away. I could clearly see antlers, though, so I knew it was a good buck.

Although I'd never fired the gun at the distance the deer was from me, I decided to risk a shot. I put the cross hairs just above the back of his neck and squeezed the trigger. The muzzle flash blinded me momentarily, but I could hear the deer going off to the left. Then he snorted at me.

I was convinced I'd missed, but my friend and I spent quite a while looking for blood or the deer. When we couldn't find either one, we gave up and went home.

Three days later, my hunting buddy called me. "Guess what?" he said. "I found your deer today."

I hadn't missed after all. I'd hit him in the shoulder, and he'd run off to the left, as I thought. But he went down after only 20 yards or so; the deer that had snorted at me was another animal.

Losing downed game is a painful and humbling experience for any hunter. And given the perception of hunters and hunting in general, it can be bad public relations if a nonhunter or anti-hunter finds a dead deer on his or her back 40.

Lt. Jack Polk, law enforcement patrol supervisor for the Florida Game and Fresh Water Fish Commission, has been hunting in the Southeast for most of his 47 years. He feels bringing game out of the woods once it's down is part of the hunter's obligation to both the sport and the wildlife. "It's a moral obligation, as well as a sporting obligation," he said.

Capt. Ed Tyer, hunter education coordinator with the Commission, said the public's perception of hunters is a major problem. "The lack of ethics is one of the biggest problems facing hunters today. There are a lot of people who are not opposed to hunting, they are opposed to what hunters do. So they're anti-hunter, not anti-hunting."

Tyer said this attitude has come about because some hunters lack ethics and responsibility. "For instance, we surveyed our students who had completed the hunter education course. We asked the question, 'Do you oppose sport hunting?' We found out that a good portion of people who hunted said they were opposed to sport hunting. The anti-hunting movement has put such a label on the term 'sport hunting' that people have come to define it as killing something for the sport of it and leaving it in the field. The term even meant this to hunters."

According to Tyer, any hunter who doesn't make every effort to find a wounded deer is not living up to his or her responsibility.

"Generally speaking, a deer is going to leave some kind of sign. He's got to — he can't just up and fly once he's shot. Once you find that sign, follow it far enough — get down on your hands and knees if you have to — until you are absolutely sure that deer has not been hit. If it has been, it's up to you to follow that sign. And when you follow it out 'til you lose it, you start circling around until you find it again. That continues until you either find the deer or you drop dead from old age."

Making certain you don't lose a deer, though, starts long before you're on your hands and knees in a swamp, wondering if that red leaf has a blood spot on it, or is just showing fall color. It begins the day you choose a gun.

Tyer's personal preference is a 6mm or .245 and up. "I wouldn't recommend anything like a .223 or .222. With a cartridge like that, you have to look for the clear shot. You're talking about one shot only, and you have a three-to-four-inch target, and that's just below the ear." ▷

Once you've selected your gun, you need to choose the right bullet and then learn the gun. That takes a lot of target shooting, Tyer said. "I don't know that you can shoot too much. Some people need only to sight their guns. For others, a hundred rounds may not be enough."

Tyer points out that all commercial ammunition is not manufactured equally. "If you buy 150-grain Remington, 150-grain Sierra, and 150-grain Federal, they're not necessarily going to have the same point of impact. If you sight in with one brand of ammo and one weight bullet, stay with that."

The best thing to do, Tyer said, is try several brands of ammunition until you find the one that shoots best in your gun. "I know it's expensive, but if you're serious about what you're doing, you should buy a box of each brand of the weight bullet you want to shoot, and then shoot that in your gun to see which one does the best for that particular gun."

The last step before you head for the woods, Tyer recommended, is to try the gun at different distances to check its performance. Charts are available that predict the rise and fall of the bullet at different distances, but Tyer prefers to find out for himself how a particular cartridge will perform in each gun.

So now you're in the deer stand. You can see a deer coming, and you know he'll be within range in just a minute. What do you need to look for, listen for, and be aware of when you get ready to fire the gun?

According to Bo Pitman, owner of White Oak Plantation near Tuskegee, Ala., a hunter needs to think about landmarks before he or she pulls the trigger. If you've been in a stand for more than a few minutes, he said, you'll be watching key areas from where you think the deer will come. Fixing particular trees, stumps, or brush in your mind will help you go to the spot where the deer was standing when you shot.

"That's going to be the first place you go," Pitman said. But that's not the only spot you need to be aware of, he continued. You need to watch where the deer goes so you have some idea of the direction in which to look once you're on the ground. "Everything the deer runs by, you ought to be making mental notes of when the deer's leaving. Remember the trees it runs by, the ditches it crosses, fences it jumps — and the last place you saw it, of course. Then go to the first place, unless you saw it fall over."

Sound is also important. Polk listens for the animal to run, and says sometimes you can hear it fall. "Most of the time it will kick a time or two. When you hear that kick, you know it's down."

Pitman agrees. He said you may be able to hear the deer a lot longer than you can see it. "Sometimes deer do funny things. It may circle right back, or you may hear it fall and go to kicking. Or, you can hear them run just clean out of earshot. Then you've got an idea which way to go."

Besides being an avid hunter, Polk also teaches tracking to law enforcement agencies and the U. S. Forest Service. Though most of what he teaches is man-tracking, the same principles apply no matter the object of the search.

When he reaches where the deer was standing, he doesn't look first for blood. "It may not bleed immediately. If it's a shot that didn't exit, there may not be blood for the first 20 or 30 yards. I look for the spot where it lunged away."

The most common mistake hunters make, Polk said, is to circle around looking for the animal itself. "That's a bad mistake. If they've found blood, they should trail the blood, no matter what other running sign they see. There may have been other animals there that you weren't able to see when you took the shot."

Pitman said hair is the first thing he looks for. "When that bullet goes in, most times it's going to come out. There ought to be a tuft of hair lying about. Especially if you're on a green field or in real clean woods, you ought to be able to find the hair."

According to Pitman, the amount as well as the kind of hair conveys information. "Sometimes if you have a graze, it knocks out a whole hatful of hair. If it's a low hit, it'll be white hair. If it's a high hit, it'll be real dark hair. If you get real short, fine hair, then you know that's a leg hit. You ought to be able to find splinters of broken bones."

CAROLEE BOYLES-SPRENKEL

Once you find that spot, Tyer said, mark it. "You can mark it with flagging tape. I know people who carry a roll of flagging tape, the kind surveyors use, all the time." He recommends placing the flagging at eye level so you can see it for some distance.

"You can also use your tape to mark your trail," Tyer continued. "Mark where you started. Go on down to where you find a drop of blood, and mark that where you can see it. Before long, you can turn around and see the direction the deer was traveling by where you've been." That can give you at least an idea of the direction the deer might continue to travel.

It will also give you a place to start if you lose the blood trail. "Then you start working in a circle looking for sign," Tyer said. "You can always tell where your line of travel was by the markings going back."

The color of the blood you're following also can give you some idea of where the deer is hit. For instance, dark blood indicates a deep cut. Light colored blood usually has air mixed with it. "The only place I shoot at is the back of the neck," Tyer said. "When I see bubbles it means there's a lot of air in the blood. This sign usually means it was hit in or around the throat."

Polk added, "If it's a light red blood, it may not be a deep body shot — it may be just a glancing shot. If it's frothy, it probably hit the lungs. If it's deep red, it's probably an accurate body shot, probably hitting the heart or an artery."

Don't assume that a deer will always continue running in the direction in which it started. Keep alert for the possibility that the animal may lay a "false" trail. "If he runs down a trail and something scares him, he's apt to turn and run right back up that trail because that's a safe place he's just come from," Tyer pointed out. This behavior could give you a trail that appears to take off in two directions.

Tyer said hunters need to be careful not to walk directly in the blood trail. "You want to walk away from it just as much as you can."

He pointed out that not all blood trails are on the ground. "There are times when you might brush your hand up on a limb that's got blood underneath. A lot of blood won't reach the ground. Look for it on bushes, on leaves of little scrub oaks or pines — look at the animal-height limbs and brush."

If you shoot a deer just at dark, what kind of light is best for tracking? "A big one!" Tyer said emphatically. He said a good flashlight will show up spots of wet blood very well in the dark.

Polk is less concerned with the size of the light than how it's used. He recommends a good flashlight, held low. "If you hold it up at shoulder height like most people would, you can't see. If you hold it low so it casts the light in front of you, almost like the light was coming from behind you, you can see much more."

When tracking at night, according to Polk, broken vegetation and other clues become more important than they are during the day. "The blood, of course, keeps you 100-percent right, but there are other indications there that you're on the right track. An animal that's running and wounded will break things that he wouldn't normally break. You're going to look at that more than you would in the daytime."

One other recommendation Polk has for tracking at night is to have another person with you. "One person holds a position, because you can talk back to him and listen to his voice as you circle to pick up the next spot of blood, and it keeps you on track."

After searching for a deer in the dark and not finding either the animal or any blood, Polk still goes back the next day and looks again. "If I shot at him, I'm going to be sure of whether he's hit or whether he died, even if I have to look the next day. Every time you shoot you should look."

Pitman agrees. He said he goes back the next day, even if he is convinced he has missed the deer. Ninety percent of the time, he continued, a lung-shot deer is going to take off running, leading many hunters to think they missed. "There's no telling how many deer would lie down to die and be lost if we didn't go back for a look. That's something we've got to do." At night, he said, you can walk right by a deer and not see it.

But what do you do if the blood trail gives out? Pitman said that's the time to sit down and think.

"If everything's failed and you've run out of blood, sit down and think of where the nearest creek is and where the thickest cane patches and briar patches are. The thickest areas, the most secluded areas are where he's going to go to bed up. That's where you'll find him."

The idea of losing a deer in the field upsets Pitman. "The main reason is that it's not fair to the deer. It's too precious a commodity to let waste. It's not ethical to let one go. It doesn't have to be a big one — it can be a spike or a doe or just a yearling. It just isn't right to go out and shoot one and not follow up on it."

Even if you follow all these tips, the day — or night — may come when you still lose a deer. That's one of the risks you take when you hunt. But by knowing how to follow a wounded deer, and by doing so systematically and carefully, you can reduce the chances of having every responsible hunter's worst nightmare come true.

Carolee Boyles-Sprenkel is a free-lance writer specializing in hunting, fishing and outdoor recreational activities. This article was originally published by Game and Fish Publications.

CAPT. TYER'S DEER TRACKING GAME

Capt. Ed Tyer, hunter education coordinator with the Commission, plays an instructional game with his hunter education classes. Any two hunters can play, with just a patch of woods and a few supplies.

"You can mix glycerine, available at the grocery store, and food coloring in a plastic bag. Then go out and lay out trails and let the other guy follow them."

Tyer said the trail can be as simple or as sophisticated as you want it to be. He sometimes uses the technique during a compass course. "We'll work them (the students) up a guide, give them a piece of paper, and say 'take these compass readings.' They follow the compass readings to the blood trail. Then they follow the blood trail to the 'deer.'"

He said the person laying the trail needs to think about what can happen along the way. If the bullet has hit an artery, for instance, you squirt some blood, walk a little way, and squirt some more. Or, put blood on limbs and leaves at deer height. "You're not going to be able to lay it exactly like a hit deer would, because that's going to be different every time. But you can trick each other and have a little fun by making it a game, and improve your tracking skills along the way."

Sharing the Hunting Tradition

By Lt. Vinard Hitt, Central Region

I dearly love deer hunting, especially on cool, foggy October mornings like this one.

It's barely daylight, and I'm perched in an oak tree that sits square in the middle of some premier northeast Florida deer habitat. Hunting is allowed here. Both bucks and does are legal game (spotted fawns may not be taken). Everything seems great. Yet, I am absolutely forbidden to take a deer. Additionally, the mosquitoes are bold and plentiful and a tick that seems almost as large as a dried butter bean is crawling along my forearm beneath my shirt sleeve. Further compounding this situation, a sleepy-eyed gaggle of folks has gathered at the gate to this place and is protesting my presence here. They are several miles away but I can occasionally hear a muted staccato monotone delivered with a cadence reminiscent of a distant dog barking in the late night. I believe they're screaming "It's not fair! It's not fair!" or "It's a sin! It's a sin!"

Ordinarily, if I were placed in a situation like this, I would be miserable and I too would probably be complaining and maybe even proclaiming "It's not fair!" But I'm not miserable, and I'm not complaining. In fact, I'm really pleased to be here because I'm here with my 11-year-old son, Dusty, taking part in the fifth annual Youth Hunt sponsored by the Florida Game and Fresh Water Fish Commission at the sprawling 70,000-acre Camp Blanding Military Reservation. It's my son's opportunity to hunt, to learn and to observe; it's my opportunity to direct, to teach and to share. We're both proud to be here.

I assume all those folks at the gate are proud of what they're doing, too. I respect their right to assemble and express their opinions and I'm impressed by the determination they've exhibited by rising from bed so early and driving great distances to state their case. I don't, however, understand what is so unfair. Neither my son, myself, nor any of the other youngsters and adult supervisors were forced, tricked or otherwise coerced into coming here. There are 40 youngsters taking part in this hunt along with one , and in many cases two , adult supervisors. All came willingly; most, eagerly. If it's a sin to share the experience of enjoying Florida's natural treasures with my son, I'm in deep trouble. Moreover, the future holds no promise of reprieve from criticism.

Contrary to what many detractors profess, we did not come only to kill. We did, however, come to share the hunting experience with our sons, daughters and grandchildren and in several instances, young neighbors or friends. Hunting certainly involves killing, but it's more than that — much more. Other things, such as ethics, responsibility, gun safety, wildlife management, conservation, companionship, patience and woodsmanship also play a part. Hunting and killing are no more the same than are the notions of conservation and preservation. The notion of conservation holds that we use certain things wisely; the notion of preservation holds that certain things not be used at all. Killing is a small part of a total hunting experience, and preservation is only a contributing factor to the broader concept of conservation. Killing is a tool of the hunter as well as the conservationist. Through shared experiences with me in the field, my son will have the opportunity to understand this.

Hunting has been a tradition passed on by members of my family for years. My father and grandfather passed the benefits of their experience and their knowledge on to me. I, in turn, have passed on

DEWEY WEAVER

***Above,** Dusty Hitt with an eight-point buck. **Below,** Matt Waters waits for an opportunity to shoot. Both were accompanied by their fathers.*

DEWEY WEAVER

everything I could to my daughter, who took her first deer four years ago.

Now my son wants to learn about hunting. He will have that opportunity, with or without the Commission-sponsored youth hunts. I certainly hope they continue, though, because they provide a safe, controlled environment that's perfect for a child to gain experience and learn to hunt properly and responsibly.

Dusty and I will occupy our perch for several more hours. We'll get hungry, and our backsides may get sore. Some of the mosquitoes will get lucky. Some will not and will go the way of the tick whose luck ran out about halfway between my wrist and elbow. We may see a deer and we may not. Dusty may get a shot and he may not. Whether Dusty harvests a deer is not particularly important. Sooner or later, his day will come. The important thing at this point is that we will have had the opportunity to spend several hours together without interruption and marvel at the antics of the spiders and lizards and toads and caterpillars and ants and squirrels and all the other interesting things that we will be privileged to observe. We will strengthen the bonds between us, and we will want to come back again, and again and again.

Lt. Vinard Hitt is the public information specialist in the Commission's Central Region.

Editor's note: Dusty took an eight-point buck, the largest harvested during the youth hunt.

Florida Buck Registry Update

Compiled By Thomas J. Wright

The Florida Buck Registry, a record of white-tail deer taken in Florida, has grown each year since it was established in 1982. Through November 1989, 1,349 Florida deer racks have been scored with 1,236 or 92% making the Florida Buck Registry. Reservists have scored 496 in the Northwest Region, 423 in the Central Region, 240 in the Northeast Region, 154 in the South Region and 36 in the Everglades Region.

This is a Commission program, neither recognized nor certified by the Boone and Crockett Club, but solely coordinated through the Wildlife Reserve Coordinator in each regional office. Scoring is based on the Boone and Crockett system because it is familiar to most hunters. The Commission currently has 12 employees around the state that were certified by the Boone and Crockett Organization.

The registry provides information on what areas and habitats produce bucks with trophy antlers and at the same time recognizes the sportsmen. Another goal of the registry is to make more people aware of the kind of deer management it takes to produce trophy bucks such as sound habitat management and a controlled and limited harvest of does and small bucks.

In order to qualify for the Florida Buck Registry, you must contact the Wildlife Reserve Coordinator in the region nearest you and meet the following criteria: 1. minimum antler score must equal or exceed 100 B & C inches for typical antlers and 125 B & C inches for non-typical antlers; 2. all deer must be taken in Florida; 3. all deer must have been taken legally; 4. deer taken in previous seasons are eligible for entry.

The following is a list of the top 10 statewide typical and non-typical trophies as well as the 10 top typical trophies by region from the registry.

NORTHWEST REGION - TOP TEN TYPICAL BUCKS

Hunter	Location Taken	Year Taken	Antler Score
Larry Furr	Gadsden County	1977	168 1/8
Danny Raines	Jackson County	1973	154 3/8
H. M. Butler	Gadsden County	1979	153 7/8
Nancy Sumner	Liberty County	1981	152 3/8
Robert Jones	Calhoun County	1985	150 4/8
Jay Taylor	Jefferson County	1987	150 2/8
Eric Richardson	Liberty County	1988	148
William C. Coxetter	Jefferson County	1984	147 7/8
D. E. Weaver	Okaloosa County	1971	147 1/8
Shorty Roberts	Gadsden County	1967	147 1/8

NORTHEAST REGION - TOP TEN TYPICAL BUCKS

Hunter	Location Taken	Year Taken	Antler Score
Chris Harrell	Madison County	1987	156 7/8
Gary W. Leis	Taylor County	1987	156 5/8
Robert S. Ballard	Columbia County	1980	153 1/8
Clifton Davis	Alachua County	1986	152 7/8
Clifford Burnham	Lochloosa WMA	1978	150 2/8
C. Frank Jones	Levy County	1957	149 2/8
Artie Hall	Alachua County	1984	148 5/8
Richard K. Lee	Hamilton County	1977	146 6/8
J. T. Reynolds	Taylor County	1983	140 4/8
Carl Jeter	Alachua County	1984	140 2/8

SOUTH REGION - TOP TEN TYPICAL BUCKS

Hunter	Location Taken	Year Taken	Antler Score
Bill Scharber	Pasco County	UNK	153 5/8
Mike Sherouse	Hernando County	1970	150 7/8
Charles P. Lykes, Jr.	Highlands County	1977	150 6/8
Stanley Gude	Pasco County	UNK	140 2/8
Lee Sisson	Hardee County	1988	139 1/8
Mark Croft, Sr.	Pasco County	1980	139
Henry Boyett	Pasco County	1955	137 2/8
E. W. Cribb	Highlands County	1981	135 6/8
Ronnie Elrod	Highlands County	1981	135 3/8
Jim Sessoms	Pasco County	1967	132 6/8
Wendell Skipper	Highlands County	UNK	132 6/8

EVERGLADES REGION - TOP TEN TYPICAL BUCKS

Hunter	Location Taken	Year Taken	Antler Score
G. P. Holly	St. Lucie County	1978	145
Jim Wilson	Indian River County	1985	144
Tom McBroom II	Okeechobee County	1966	140 1/8
Greg Cadenhead	Indian River County	1981	134 1/8
Jack Daughtrey	Martin County	1964	132
James N. Orth	Indian River County	1966	131 1/8
Glenn Schenavar	Indian River County	1987	128 5/8
Greg Wurster	Palm Beach County	1981	123
Jim Handley	Okeechobee County	1987	122 7/8
Charles F. Keels	Rotenberger WMA	1963	122 3/8

CENTRAL REGION - TOP TEN TYPICAL BUCKS

Hunter	Location Taken	Year Taken	Antler Score
Robbie Hastings	Ocala National Forest	1940	154 3/8
Melvin Arline	Citrus WMA	1980	152 5/8
Herbert G. Weagraff	Orange County	1986	149 4/8
Rick Hannis	Brevard County	1985	146 7/8
Ronald L. Waldron	Orange County	1975	144 5/8
Jim Wilson	Brevard County	1984	143 5/8
Randy Alderman	St. Johns County	1966	142 3/8
Melvin Arline	Citrus County	1983	141 5/8
W. Bryant Adams	Osceola County	1959	140 3/8
Gerald Sherrer	Marion County	1968	140 2/8

TOP TEN FLORIDA BUCK REGISTRY

(Typical)

Typical antlers are symmetrical in form, with matching pairs of tines from the upper surface of both main beams.

Hunter	Location Taken	Year Taken	Antler Score	No. of Tines
Larry Furr	Gadsden County	1977	168 1/8	14
Chris Harrell	Madison County	1987	156 7/8	12
Gary W. Leis	Taylor County	1987	156 5/8	11
Danny Raines	Jackson County	1973	154 3/8	10
Robbie Hastings	Ocala National Forest	1940	154 3/8	12
H. M. Butler	Gadsden County	1979	153 7/8	12
Bill Scharber	Pasco County	UNK	153 5/8	10
Robert S. Ballard	Columbia County	1980	153 1/8	11
Clifton Davis	Alachua County	1986	152 7/8	11
Melvin Arline	Citrus WMA	1980	152 5/8	15

(Non-Typical)

Non-typical antlers are frequently nonsymmetrical and have unmatching tines growing from the sides or lower surfaces of both main beams. They may also have tines on the upper beam surfaces.

Hunter	Location Taken	Year Taken	Antler Score	No. of Tines
Clark Durrance	Wakulla County	1940s	201 3/8	25
Henry Brinson	Jackson County	1959	186	29
W. L. Hurst	Calhoun County	1970	181 2/8	22
Clay H. Mickler	Pasco County	1985	170 4/8	20
Billy Joe Bass	Madison County	1975	163 1/8	16
Charles Dean	Taylor County	1936	162 5/8	18
Ronnie Elrod	Highlands County	UNK	160 6/8	22
Alton Bonds	Suwannee County	1986	156 5/8	15
Wesley N. Oehmig	Alachua County	1985	153 5/8	15
Mark Jones	Holmes County	1986	152 1/8	14

TROPHY BUCK

By Lt. Stan Kirkland, Northwest Region

It's a unique occasion when a white-tailed buck taken in Florida makes it into the national record books. Due to the state's poor soils, older, bigger bucks don't tend to develop the massive antler characteristics that get a rack listed in Boone and Crockett's prestigious record book.

In fact, since the Florida Buck Registry was started in 1982, none of the wildlife reservists or wildlife biologists who measure deer racks have ever seen a Florida-killed deer that would get in *Boone and Crockett's All-Time Book*. At least not until now.

Last May, 74-year-old Clark Durrance of Tallahassee came forward with a 25-point, non-typical rack from a deer he killed in Wakulla County almost five decades ago. This rack will make the book with inches to spare.

This deer scored 201⅜ non-typical inches and has been recognized by the Florida Game and Fresh Water Fish Commission as the largest non-typical buck ever to be scored in the state. The rack sports 11 points on the right side, 14 on the left and measures 27 inches at its widest point.

To make *Boone and Crockett's All-Time Book*, which is the comparison standard for big white-tailed bucks nationally, non-typical deer racks must score at least 195 and typical racks 170. Racks are measured or scored in inches to the nearest ⅛ inch.

Non-typical racks are rewarded for their number of points and antler beam size. Typical antlers, on the other hand, take into account symmetry of antler points, and beam size.

Prior to Durrance's buck, the top non-typical rack in the state was a 29-pointer that scored 186⅛. That deer was taken by Jackson County farmer Henry Brinson in 1959 but was only discovered and recognized in early 1988.

The largest typical rack belongs to Larry Furr of Gadsden County. He killed a 14-point buck in his home county in 1977 that scored an impressive 168⅛ inches, missing B & C's book by only 1⅞ inches.

Clark Durrance grew up in Medart, a small rural community in Wakulla County. His mother owned the town grocery store and his father was county tax collector.

Growing up in a rural county, Durrance said he went hunting and fishing at every opportunity with his uncle, Walter, and his father, who was referred to as "Papa" by his family. He said he trailed many miles behind Papa hunting deer while carrying a 12-gauge double-barrel shotgun loaded with black powder shells.

Durrance said he killed his record buck in December of 1940 or '41, he can't remember which year. But he does remember that he, Papa and Uncle Walter had gone camping off Lighthouse Road near a sulphur spring between Newport and the East River.

"We'd usually go camping and hunting on a Monday but we'd be back by Friday. Papa was a Primitive Baptist; he just didn't believe in hunting on Sunday, and we never did," he said.

"Back then the hunting season always opened on Nov. 20 and closed sometime in January."

Durrance said he, Papa and Uncle Walter always used deer dogs and they pretty much shot what came by them. He said their dogs were kept by Lonnie Poole of Medart.

"To be honest, it's been so long I really don't remember many of the details of how I killed this buck, but I killed him ahead of the dogs," he said.

Not long after taking his big buck, Durrance said he put the rack up for display in his mother's store in Medart.

"People always told me they had seen a lot of deer but never one quite like that one."

He said soon after putting the rack in his mother's store he went overseas to serve in World War II. The rack stayed right there and was probably seen by thousands of people. When his father died in 1959, Durrance took the rack to Tallahassee and put it in his West Florida Grocery Wholesale office.

It remained there on his wall in his private office, away from public view, until the early '70s. Then Durrance let a Florida State Trooper, who dabbled in taxidermy on the side, mount the rack, using a cape from another deer. The mount was then taken back to his office until he retired from his business in 1975. From there, the mount finally made it to his Waverly Road home.

But Durrance's trophy entering both Florida's and B & C's record book is a case of something that almost went awry.

In January 1987, Durrance took his 25-point mount and put it up at a nearby hunting plantation for the members to see. The deer head hung there in the main hunt house until one day when the plantation manager contacted Commission Wildlife Biologist Don Francis to have the rack scored.

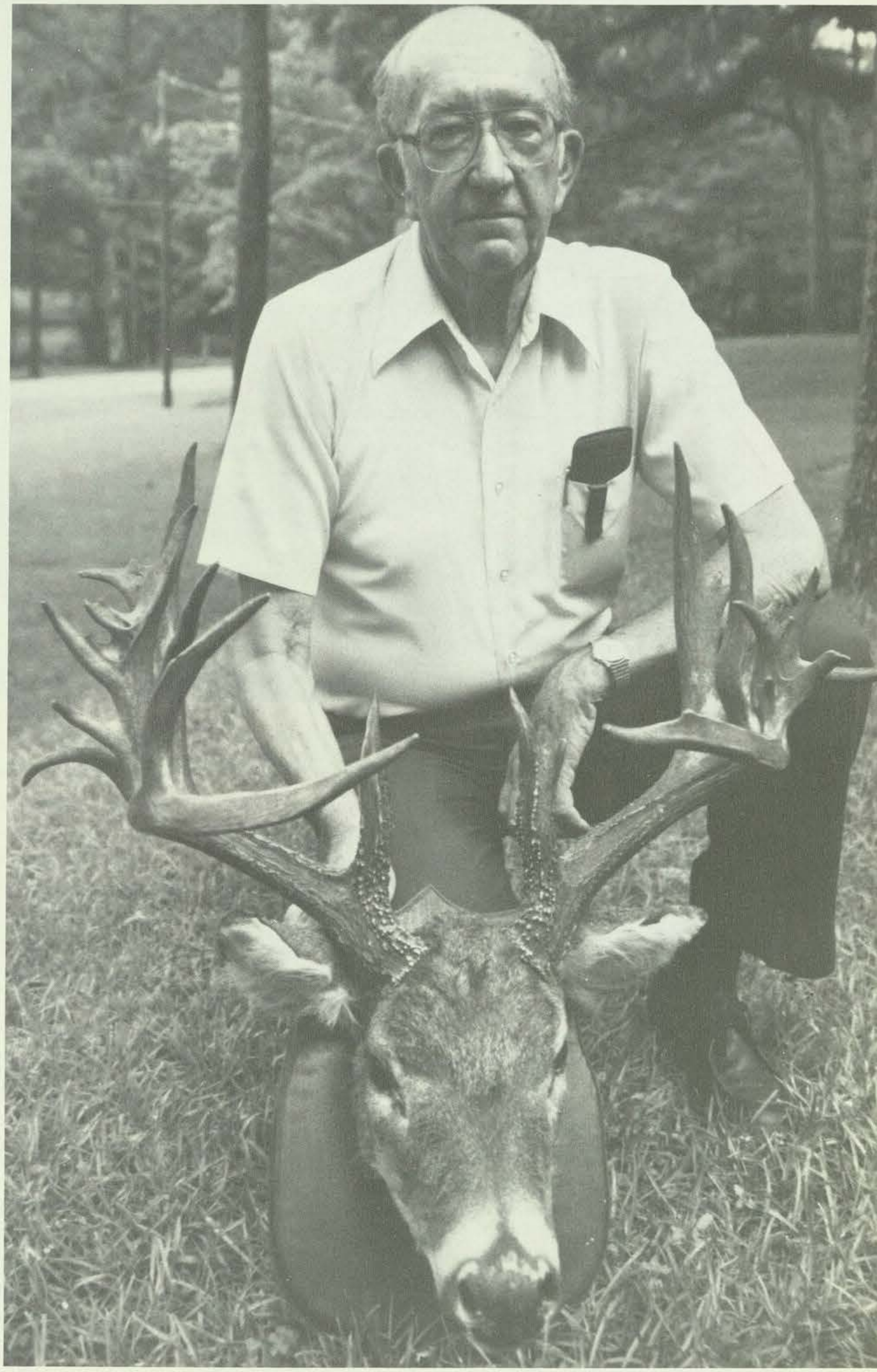
Francis scored the rack, and the plantation manager returned it to the house, but Durrance apparently wasn't told what had transpired.

After the end of the '87 hunting season, Durrance picked up his mount and it hung in his home until last May when he saw an announcement indicating deer heads were being scored for the Florida Buck Registry at a Tallahassee business.

Durrance took the rack in, and Francis, who was scoring racks along with several reservists, took one look at it and knew it was the one he'd scored two years before. This time the proper paperwork was completed, including the owner's signature, and the head was on the road to official recognition.

Today, Durrance and his wife Gladys divide their time between homes in Tallahassee and Waynesville, North Carolina. He still hunts and fishes at every opportunity, but he'll never forget the deer that put his name in the record books.

Lt. Stan Kirkland is the public information specialist in the Commission's Northwest Region.



STAN KIRKLAND

This 25-point non-typical buck roamed Wakulla County woodlands, near Newport, in an area that's now part of the Aucilla Wildlife Management Area.

It's The Law

By Inspector Kyle Hill

GFC

Question: I received a citation the other day from a wildlife officer for "littering." Don't your officers have anything better to do?

Answer: The fact is that wildlife officers have *nothing better* to do than protect our fish and wildlife and their habitats! Littering and dumping have serious environmental consequences that are many times more deadly to our resources than a poacher's bullet or illegal net. From one can or bottle thrown in haste, a dump site can grow that can permanently contaminate an area with harmful pesticides, hazardous chemicals and toxic wastes. Such sites in Florida are responsible for the deaths of thousands of fish and wildlife specimens each year. Rains and floodwaters carry pollutants from illegal dump sites to streams, rivers and lakes where they settle and further contaminate our sensitive habitats.

The Game and Fresh Water Fish Commission believes that without strict enforcement of state laws protecting our environment, the future for fish and wildlife is bleak. Although wildlife officers have always aggressively enforced such laws, recently we committed 39 positions to full-time environmental law enforcement. These specialized officers will target large-scale dumping and pollution, with major emphasis on jailing dumpers of building materials, car batteries, tires, motor oil, chemicals and other toxins.

Littering and dumping are serious offenses in Florida. For most types of litter violations it is mandatory that the court require the offender to pick up litter or perform other labor as a "community service." This is in addition to the fine, which in the case of "commercial dumping," could be as much as $5,000 and/or five years in jail.

Also, the state does not have the burden of proving that the person did not have the right or authority to dump the litter or that litter dumped on private property causes a public nusiance and damages our wild resources.

So, for conservation's sake, don't litter, and inform your hunting/fishing buddies of the impact of littering. If you see people dumping large amounts of trash or debris, call our Wildlife Alert toll-free number listed in the front of your telephone book and on page 48 of this magazine. You need not give your name, and rewards are available to callers giving information that leads to arrests.

By Lt. Lynne Maddox
Hunter Education Officer, West Palm Beach

Use of off-road vehicles (ORVs) on national forests, wildlife management areas (WMAs), and other lands, both public and private, is an increasingly popular pastime. To keep this use from becoming abuse, the U.S. Forest Service has launched "Tread Lightly," an educational program aimed at reducing vehicle-caused damage on wild lands.

Wheeled vehicles such as 4-wheel drives, dirt bikes and all-terrain vehicles (ATVs) can damage roads, trails and wild areas. Damage often occurs due to careless driving or when conditions are wet. Also, ATVers may inflict stress on wild animals, especially those that are weak from rearing young or from lack of food.

When conditions are wet, driving techniques should be modified or travel delayed. Roads, trails and wild areas are easily damaged as traffic increases. Ruts scar the landscape, destroy vegetation and start channels for erosion. Soil washes away, and rivers fill with sediment. Damage is often costly or impossible to repair.

The reasons ORV users damage wild lands can be as diverse as the users themselves. Unthinking or unethical users cause extensive damage to roads, trails and wild areas during wet spring and fall hunting seasons. Young drivers approaching the legal driving age often follow the practices of their elders and receive little or no information on how to use vehicles responsibly. Advertising agencies often show their products driven in ways that are environmentally destructive. Readers and viewers think these activities are appropriate, so they use their vehicles as depicted in the ads.

People are welcome to drive their vehicles on public lands where roads, trails and areas are designated for such use. But when people drive their vehicles improperly, in the wrong places or at the wrong times, they damage vegetation, disturb wildlife, scar the landscape, create soil erosion and water pollution problems and even damage man-made facilities. Vehicular travel will have to be restricted if people do not learn to drive their machines with respect for land and property.

Certain roads, trails and areas are closed at different seasons to protect wildlife that are rearing young, prevent surface damage or protect newly planted trees or other vegetation. Vehicles are barred on old roads that are being restored to natural conditions. Vehicles should not enter closed areas noted on travel maps, WMA brochures, or marked by signs, gates or other barriers.

Before using their ORVs on public lands, visitors should obtain a travel map from the Forest Service, or similar information from other agencies. The Game and Fresh Water Fish Commission provides WMA brochures, which contain a regulations summary and an area map, for all 62 WMAs. Travel maps show areas, roads and trails open to vehicle use, those with restrictions and those that are closed. Before driving on private land, travelers must obtain the owner's permission. And it's a good idea to get it in writing.

With ownership of recreational vehicles comes the responsibility to use them with respect and care for the environment, for facilities and for other people. Roads, trails and wild areas are available for proper recreational vehicle use. But abuse of land, facilities and resources — or unsafe driving — may bring about restrictions and closures. Some roads are designated open to ATVs and dirt bikes where laws and safety factors permit. Riders are responsible for complying with legal and safety requirements on these roads.

"Tread Lightly" materials for education are available and may be ordered from:

Tread Lightly
Recreation and Lands
Forest Service - U.S.D.A.
324 25th Street
Ogden, UT 84401
Phone: (801) 625-5162

Take pride in America. Use recreational vehicles responsibly and TREAD LIGHTLY.

BILL BURGIN

Conservation Update

Compiled By Scott Ball

Wildlife Officer Honored For Manatee Patrol Efforts

The Save the Manatee Club recently named Sgt. Bruce Lawless of Sunrise as its Law Enforcement Officer of the Year. Lawless received the award for his efforts to protect the endangered sea mammal.

According to his supervisor, Capt. Eddie Wheeler, Lawless was singled out for his "well-documented zeal in enforcing manatee speed zones" in the Ft. Lauderdale area. "During 1988 Sgt. Lawless wrote more than 62 citations and nine warnings for violation of manatee areas. He always leads the Everglades Region in this category."

The Port Everglades area, where Lawless patrolled in 1988, is crowded with manatees that congregate around the Florida Power Plant warm water discharge area during the cooler winter months. "They are extremely vulnerable to speeding boats at that time," Lawless said. "Most adult manatees, if they survive, bear scars left by propellers. That's what we're trying to stop.

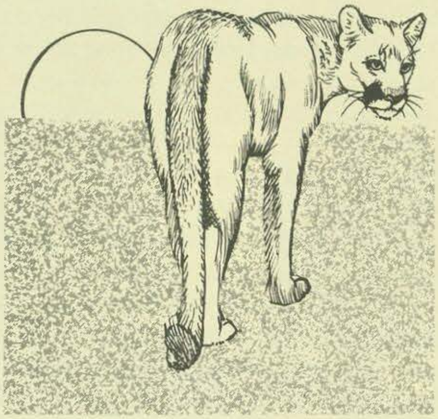
"Public education is one tool to help save these timid creatures. I salute the Save the Manatee Club for their efforts in this area. The boating public needs to understand the laws protecting the manatee, and why they exist," he added.

All manatee speed zones and protection areas are clearly marked, according to Lawless. "A manatee refuge indicates no boating activity whatsoever. Other areas are posted as idle or slow-speed zones. People who violate these state laws may incur a fine of $500 and/or a jail sentence of 60 days."

Lawless received the award from Save the Manatee Executive Director Judith Delaney Vallee at a ceremony at the Miami Seaquarium's Manatee Breeding Facility.

Information on manatees and related issues is available by contacting Save the Manatee Club, 500 N. Maitland Ave., Suite 210, Maitland, FL 32751; or telephone (407) 539-0990.

MIAMI SEAQUARIUM



Florida Panther Dies Of Rabies

The first Florida panther known to die of rabies was found in Everglades National Park Thanksgiving morning.

Scientists suspected rabies as a cause of death because of the condition of the area where the panther was found. The grass surrounding its body had been trampled, some had been pulled up by the roots and a "grass ball" was found in its paws. According to Dave Maehr, head of the Commission's panther research efforts in south Florida, these are signs that the animal suffered from a neurological disorder characteristic of certain diseases, including rabies.

The cat was taken to the University of Florida College of Veterinary Medicine at Gainesville where Dr. Melody Roelke, the Commission's wildlife veterinarian, assisted pathologists in performing a necropsy to determine the cause of death.

The dead cat, a 3-year-old 116-pound male, could have contracted the disease by eating, fighting or otherwise coming into contact with a rabid animal.

Biologists assured local residents that there was no abnormally high rabies threat in the area. On the other hand, those who took part in the necropsy already were vaccinated against the disease but required booster shots to strengthen their protection from rabies. Others who came into contact with the animal's carcass underwent counseling to help them decide whether to receive rabies shots.

The population of the endangered species, Florida's State Animal, is estimated at 30 to 50 animals.

New Assistant Editor Joins Staff

FLORIDA WILDLIFE recently welcomed Scott Ball as its new assistant editor. Ball replaces Mary Tebo, who resigned in November to pursue travel opportunities and free-lance work.

Though new to the magazine staff, Ball has been with the Commission for 10 years. His previous work includes stints with the Audio Visual Section and News & Information Services. He also served as administrator for the Wildlife Alert Reward Program and has contributed articles to *FLORIDA WILDLIFE* on several occasions.

— Andrea H. Blount

Commission To Step Up Lake Restoration Efforts

Recent increases in freshwater fishing license fees will provide funding the Game and Fresh Water Fish Commission needs to step up lake restoration efforts throughout the state.

Over the past 20 years, the Commission has carried out a number of successful lake restoration projects and has developed technology to manage aquatic habitat and fisheries.

"However, we did not have enough money for a major lake restoration program until now," said Bob Wattendorf, assistant director of the Commission's Division of Fisheries.

The first lakes to benefit from the new program will be East Lake Tohopekaliga, Lake Miccosukee and Lake Monroe. During the next several years, major projects will be considered for lakes Istokpoga, Jackson (Osceola County), Jessup and possibly Merritt's Mill Pond.

The Commission's first attempt at restoring a lake was nearly 20 years ago. In 1971, Lake Tohopekaliga was drawn down for the first time, and the project was regarded as a tremendous success. The drawdown turned a rapidly declining fishery around and resulted in a five-fold increase in largemouth bass and an increased sport fishing value of approximately $6 million.

Since that time, the Commission has restored 14 lakes which range from small urban ponds to the third largest lake in Florida, Lake Kissimmee.

— Mark Trainor

Nature Photography Workshops

Shutterbugs looking to improve their outdoor photography skills may be interested in several workshops to be held at the College of Boca Raton March 17-25.

WORKSHOPS '90 will include two-, three- and five-day sessions on a variety of photographic topics, including nature, wildlife and travel photography. Instructors of the workshops include John Shaw, Patricia Caulfield and Harvey Lloyd, each a respected professional in his or her field. Assistance will be provided by the American Society of Magazine Photographers, South Florida Chapter.

For information and registration contact Anita or Earl Starkoff at South Florida Photographic Workshops, 1900 Corporate Blvd. N.W., Boca Raton, FL 33431, 1-800-323-3932. From Boca Raton call 997-9879.

Seventh Annual Photography Contest Coming

Taken any good wildlife photographs lately? We'd like to see them in our seventh annual *FLORIDA WILDLIFE* photography contest. Specifically, we're looking for slides taken in Florida of wild, native species. No need to rush them to us just yet, though. Official rules and entry forms will be published in the March-April issue.

How Old Is That Duck?

It's hard for duck hunters to determine the age of any bird that flies within shotgun range. Then again, it's not the duck's age that's important, only whether it's legal game. However, researchers need to know the age makeup of the waterfowl populations they are managing.

According to *MARSHWATCHER*, a publication of Ducks Unlimited, waterfowl biologists can estimate the age of a duck by studying feather wear, variations in the color of its plumage and changes in its feathers caused by molting. The most important thing scientists need to know about a duck's age is whether it's a juvenile or an adult.

If you are interested in aging your birds during hunting season, the easiest way is to check the tail feathers. Juveniles will have notched feathers and adults will not. This method is accurate, but not quite foolproof. Late in the season, some juveniles may have molted their tail feathers and thus look like adults.

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Floridana

Though you won't find it perched on the lottery logo, the roseate spoonbill is perhaps more deserving of such an honor than the flamingo. Spoonbills are native to Florida and are intimately linked to our state's natural heritage. The sunset pink of their wings and belly, their black nape and bald gray head, and the touches of carmine along the shoulder can rival the color combinations found on almost any other bird.

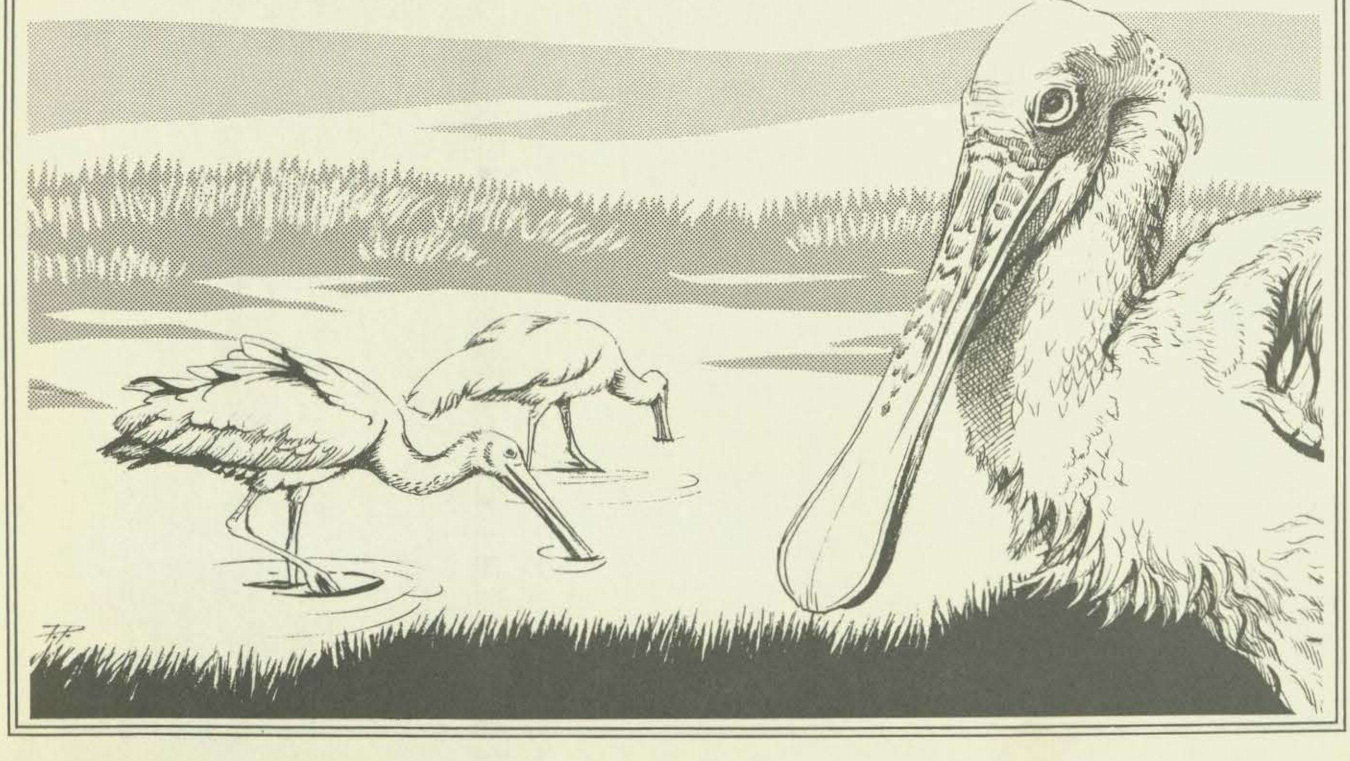
Most flamingos, on the other hand, probably came to our state via shipping crates. Flamingos may have nested in the Keys many years ago, but none nests in the wild today in Florida. Associating flamingos with something "Floridian" is as incongruous as advertising a Florida tourist center with pictures of snow-covered mountains.

The silhouette of a spoonbill is unmistakable; no other bird in Florida has a bill that is two inches wide at the base and flattens out like a spatula. The bird forages by moving its spatulate bill laterally to and fro like someone stirring soup in a kettle. They sense prey mostly by feel rather than by sight, and you can often see spoonbills with their heads completely submerged. When the bill strikes small crustaceans, killifish, fry, etc., it snaps shut, and, as a result, the bird usually takes in a little vegetation as well as animal prey.

Spoonbills and most wading bird populations in Florida were decimated during the early 1900s by plume hunters. Their dazzling pink wing feathers were especially popular for use in fans. The carnage created by the feather trade was so extensive that a feather auction in London in 1902 sold 48,240 ounces of feathers. Since it requires about four birds to make one ounce of feathers, an estimated 192,960 birds were killed for this auction. Most were breeding adults killed at their nests, which meant the probable loss of another 200,000 to 300,000 young and eggs. At the time, an ounce of feathers sold for $32, while gold sold for a mere $16 an ounce.

Today, spoonbill distribution in Florida has rebounded, and they are found in many coastal areas about the state. Spoonbills prefer boggy sloughs, shallow bays, and mangrove swamps, and inland observations of the species are rare. Range expansion along the east coast of Florida has been especially dramatic over the last few years, and spoonbills can now be regularly found as far north as St. Augustine. On the west coast, they can be seen regularly as far north as Cedar Key and occasionally elsewhere along the Panhandle coast. One potential reason for the expanding range of spoonbills is the long-range dispersal of juveniles after the nesting season.

— Jim Cox



Wildlife at the turn of every page.